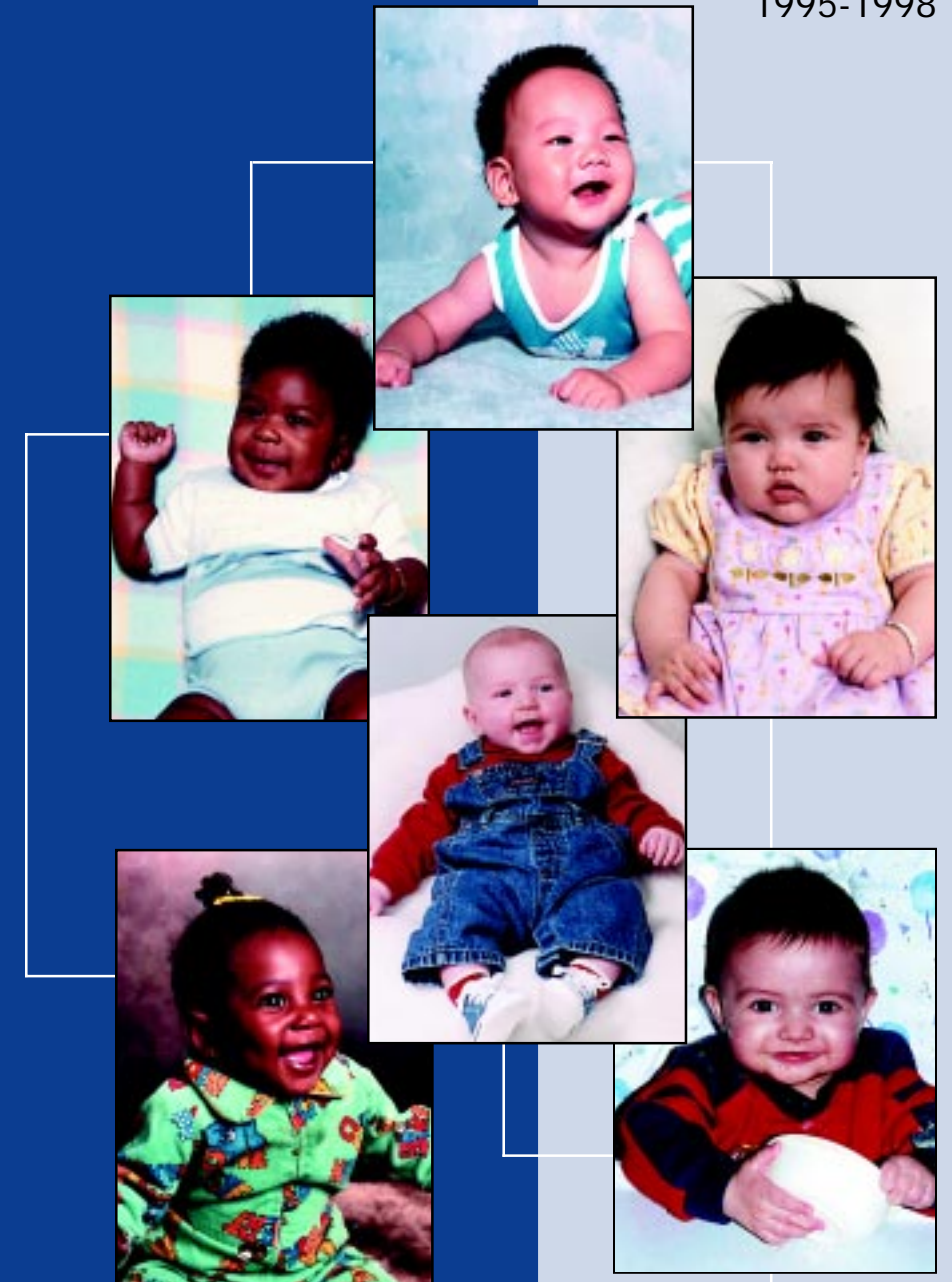


Atlas of low birthweight births in California

1995-1998



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California Department of Health Services
Maternal and Child Health Branch
Epidemiology and Evaluation Section

2000



Gray Davis
Governor

Grantland Johnson
Secretary, Health and Human Services Agency

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Director, Department of Health Services

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Highlights

- *During 1995-98, 6.1 percent of infants born to women in California were low birthweight, weighing less than 2,500 grams (about 5.5 pounds) at birth.*
- *Low birthweight is not evenly distributed throughout the state. Out of 5,858 Census tracts in California, there were 223 that had a significantly high rate of low birthweight during 1995-98. There were also 301 tracts that had a significantly low rate. (For this report, rates were calculated for singleton births only; twin and other multiple births were excluded.)*
- *The highest low birthweight rates tended to be found in neighborhoods in several cities in the central valley, as well as central Los Angeles, eastern San Francisco, and parts of the eastern Bay Area, including Oakland and Richmond.*
- *The lowest rates of low birthweight were scattered in various areas of the state, including parts of the East Bay hills, eastern Orange county, the eastern Sacramento suburbs, Census tracts surrounding San Diego, and several other areas, often rural or suburban.*
- *For several, mostly rural Census tracts, there were too few births to calculate a stable low birthweight rate. However, the atlas demonstrates the frequency of low birthweight births in these areas.*
- *African American mothers were more likely than mothers of other ethnic groups to have a low birthweight infant. About 11.7 percent of African American infants were low birthweight, compared with about 5.6 percent of Latino infants, 5.8 percent of white infants, 5.8 percent of American Indian or Alaska Native infants, and 7 percent of Asian or Pacific Islander infants. Because low birthweight rates vary by maternal race and ethnicity, concentration of different maternal racial and ethnic groups appeared to contribute to the geographic variation in rates. For example, low birthweight rates were often lower in areas where Latina mothers were clustered.*

BACKGROUND

Low birthweight, or births weighing less than 2,500 grams (about 5.5 pounds), is one of the strongest risk factors for infant mortality and poor child development. This section describes risk factors for low birthweight, for both singleton and multiple births.

In 1996, infants born with low birthweights were over 22 times as likely to die in the first year of life as infants who weighed more than 2,500 grams at birth.¹ Infants born of low birthweight who do survive tend to have poorer health than other children, including more chronic health conditions, hospitalizations, and physical limitations.^{2,3} Low birthweight children may have cognitive impairments and tend to perform more poorly in school than other children.^{2,4} Intensive interventions aimed at children born of low birth weight do not seem to greatly improve the cognitive difficulties these children have in the long term.⁵

Low birthweight may be a result of either of two circumstances: infants may be born preterm, before 37 weeks gestation, so are not fully developed; or infants may be either full-term or preterm, but unusually small for their gestational age. These two circumstances are believed to have separate causes and must be addressed in different ways.

The national *Healthy People 2000* program set a goal for no more than 7 percent of infants to have low birthweights by the year 2000. However, despite the targeted reduction, low birthweight has been increasing in the United States since 1984.¹ Low birthweight continues to be somewhat less frequent in California than in the nation as a whole. The national low birthweight rate in 1998 was 7.6 percent, while the low birthweight rate in California was 6.2 percent.

The major cause of the recent increase in low birthweight is a rise in twin, triplet, and other multiple births, but low birthweight to singleton infants has also

risen slightly. Multiple births are usually smaller than singleton births. Multiples often, but not always, result from the use of fertility treatments. Women receiving fertility treatment generally have different characteristics than those whose singleton infants are low birthweight. The purpose of this atlas is to identify areas where singleton infants have a high risk of low birthweight, since mothers of these infants tend to be those most in need of health services; women having multiple births usually receive high-level prenatal services. For this reason, *the maps in this atlas exclude twin and other multiple births* from consideration for calculating low birthweight rates and demonstrating where low birthweight births occur.

Researchers have identified several risk factors as being important for low birthweight, in addition to multiple birth. Mothers of low birthweight infants have higher rates of smoking during pregnancy.⁶ Mothers with poor weight gain during pregnancy are also at higher risk of a low birthweight infant.⁷ Some medical complications of pregnancy, such as hypertension or infection, are associated with low birthweight.^{8,9} Low birthweight occurs more frequently among mothers who have a low education level or low income,^{10,11} who are unmarried,⁹ or who are African American.¹² Mothers of low birthweight infants are more likely than other mothers to have late or no prenatal care.⁹ Very young teenage mothers are at higher risk of having a low birthweight infant.¹³ Latina mothers born outside the United States have lower rates of low birthweight than those who are U.S.-born.¹⁴

Despite intensive study and several programs devoted to the reduction of low birthweight, the rate of low birthweight continues to rise. This trend contradicts improvements across most other indicators of child health. Several factors in low birthweight appear to be difficult to address. The causes of preterm delivery, in particular, are poorly understood. Further research and the implementation of new programs are likely to be needed in order for low birthweight to be reduced.

LOW BIRTHWEIGHT IN CALIFORNIA, 1995-98

In California, low birthweight fluctuated around 5.9 to 6.0 percent during the 1980s, but has increased slightly this decade to 6.1 percent during 1995-98, or an average of 32,727 low birthweight births each year.

Overall, over 97 percent of infants born in 1995-98 were singleton births, while about 2.5 percent were twins, triplets, or other multiples. About one in twenty singletons, compared with just over half of multiple births, were low birthweight. Eliminating multiple births from the atlas caused us to exclude about 21 percent of low birthweight infants during this time period.

Low birthweight rates in California vary by county (table 1, page 98). The rates provided in this section include both singleton and multiple births. In 1995-98, the lowest rates of low birthweight were found in Glenn, Plumas, and Napa counties, all of which had a low birthweight rate less than 4.5 percent. The highest rates were found in San Francisco, Alameda, and Trinity counties, with rates greater than 6.8 percent. Overall, 23 counties had a rate that was significantly lower than the statewide rate during this time period, while 7 counties had a rate significantly higher than the state rate.

Preterm births are highly likely to be low birthweight. Overall, 28 percent of births occurring before 37 weeks' gestation were low birthweight in 1998, compared with 2.5 percent of births occurring at 37 weeks or later.

In 1995-98, the largest group of California infants, 47 percent, were Hispanic/Latino; among this group,

overall, 5.5 percent were low birthweight. Births to non-Hispanic white women accounted for 35 percent of infants, and 5.6 percent of them were low birthweight. Asian and Pacific Islander infants constituted about 11 percent of births; 6.7 percent were low birthweight. About 7 percent of California infants were African American, and they had a low birthweight rate of 12 percent. Finally, one-half of one percent of California infants were American Indian or Alaska Native, and 6.1 percent of them were low birthweight.

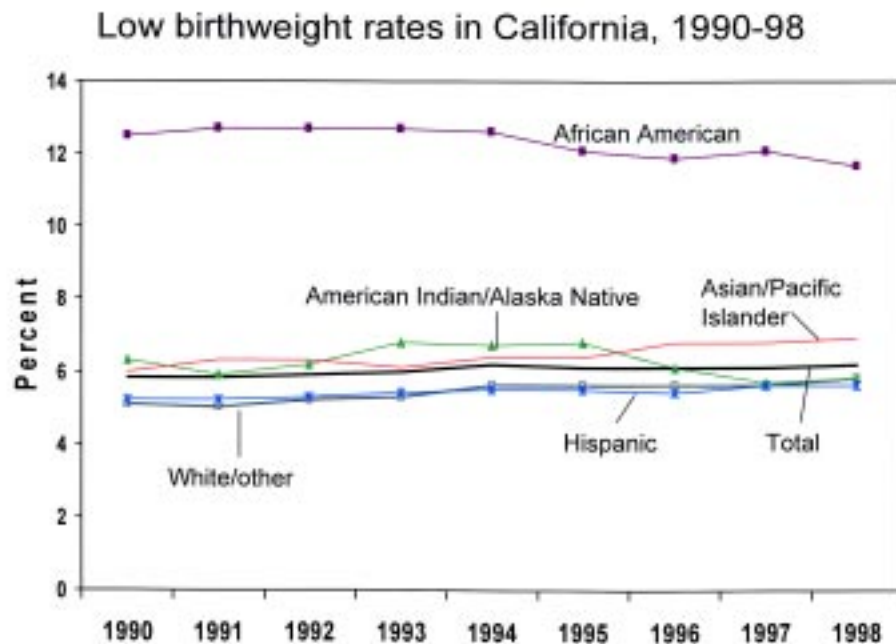
Mother's age also was a factor in low birthweight. The lowest rates of low birthweight occurred among mothers ages 25 to 29, whose low birthweight rate was 5.3 percent during this time period. Relatively high rates were found among teenage mothers; 9.6 percent of births to mothers under the age of 15 were low birthweight. Older mothers had high rates as well; 9.4 percent of births to mothers 40 and older were low birthweight. Older mothers are more likely to have multiple births, which accounts for part of the reason why their overall low birthweight rates are higher.

Mothers who began prenatal care in the second trimester or later, or who had no care, had a low birthweight rate of 6.8 percent, compared with 5.9 percent for mothers receiving early care. Unmarried mothers had a rate of 7.4 percent, compared with 5.5 percent for married mothers.

The figure on the next page shows the trend in low birthweight rates for all infants (singleton and multiple) from 1990-98.

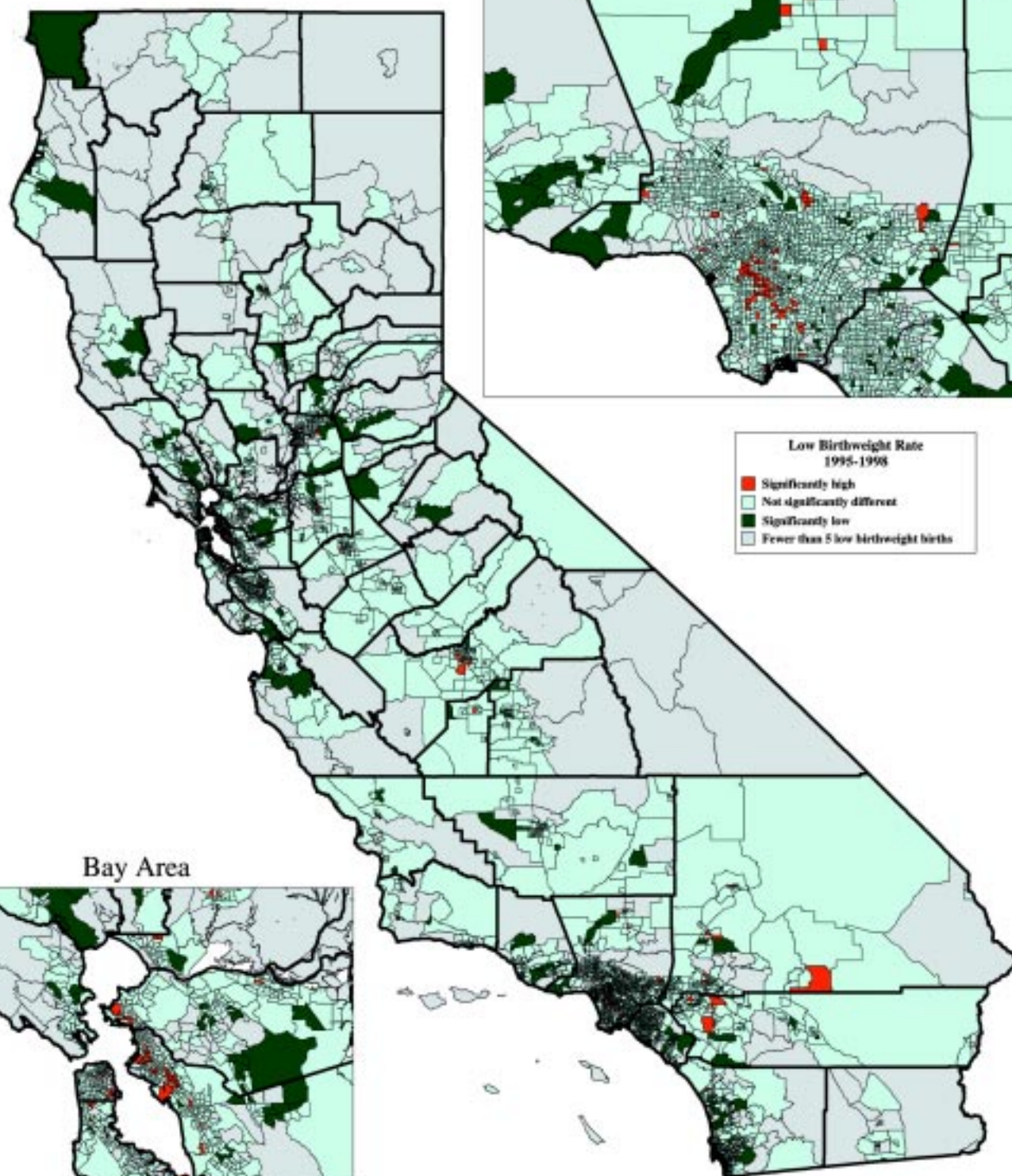
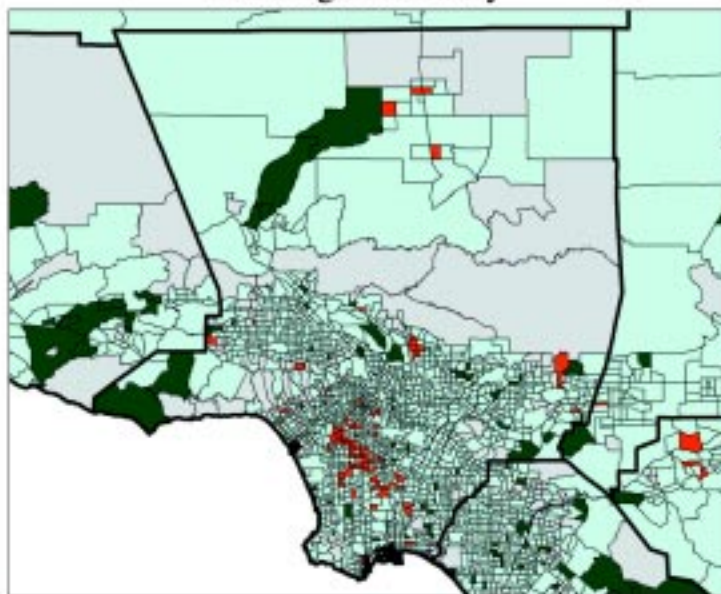
HOW TO READ THE MAPS

- Census tracts are defined by thin black lines.
 - *Red Census tracts* are areas with a significantly high low birthweight rate.
 - *Blue Census tracts* have a rate not significantly different from the rate in the State as a whole.
 - *Green Census tracts* have a significantly low rate of low birthweight.
 - *Gray Census tracts* had fewer than 5 low birthweight births during 1995-98 so no rate was calculated.
- Thick black lines define county boundaries.
- Small black dots represent cities.
- Census tract size is not related to the frequency of births; in other words, larger Census tracts may not have a larger problem. The locations of births must be observed in order to determine how common a problem low birthweight is in a given area.
- Symbols represent approximate locations of residences of mothers of low birthweight infants (within a mile of the actual location, to preserve confidentiality).
 - *Purple circles* represent Hispanic/Latina mothers.
 - *Blue triangles* represent white mothers.
 - *Green squares* represent Asian or Pacific Islander mothers.
 - *Yellow diamonds* represent African American mothers.
 - *Off-white stars* represent American Indian or Alaska Native mothers.
- Double gray lines are freeways or highways.

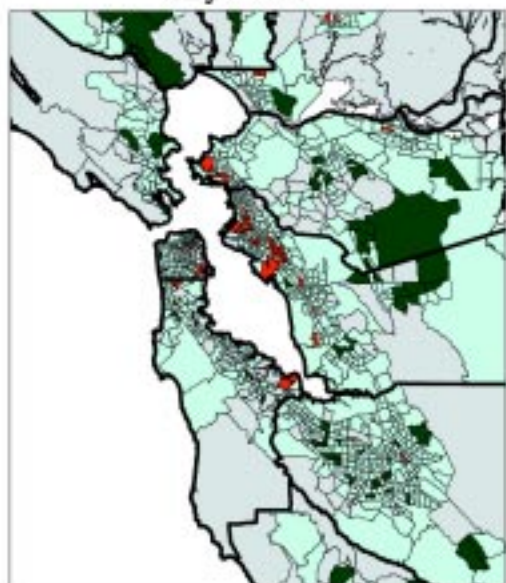


Low Birthweight Rates in California, 1995-98

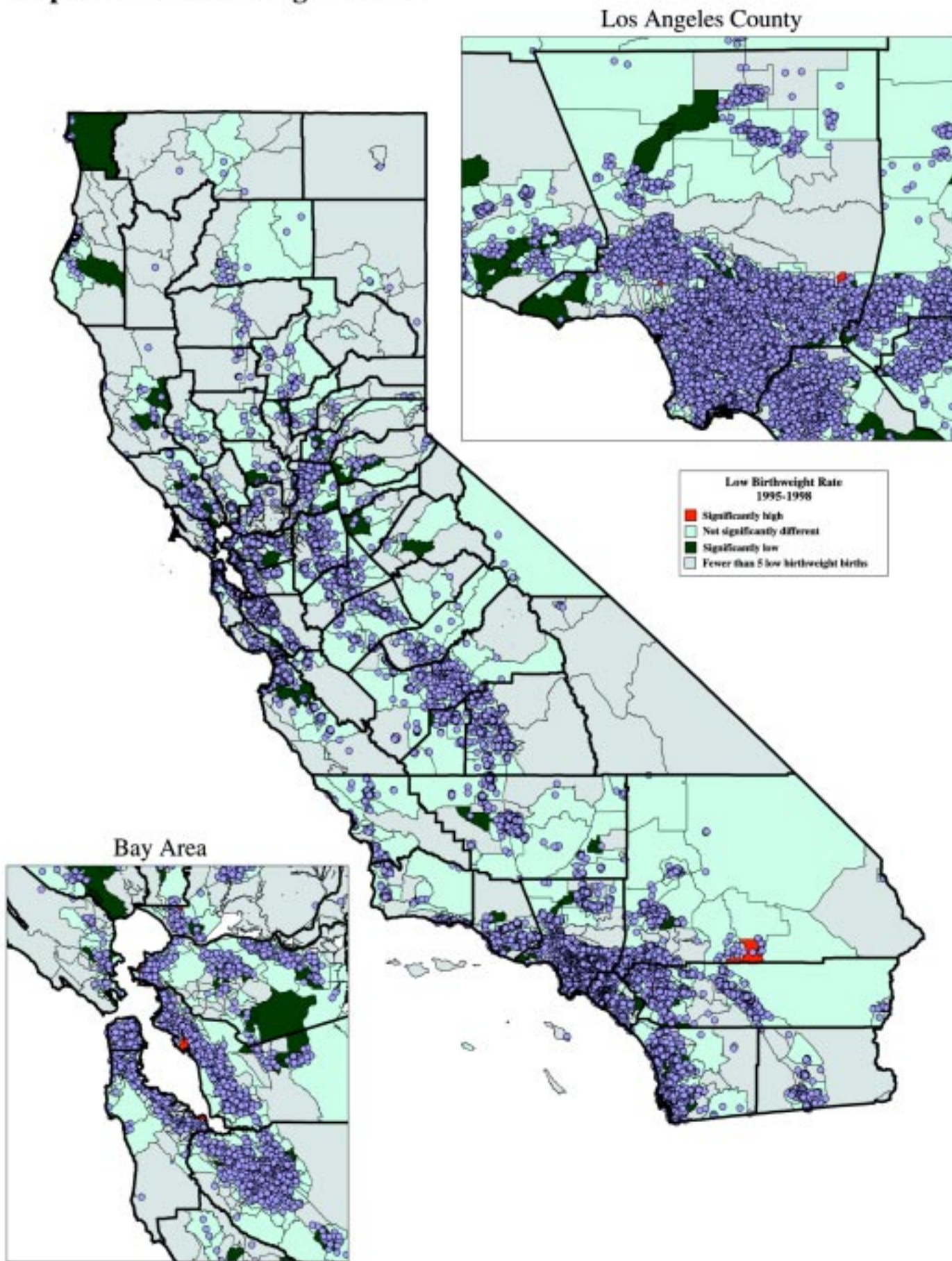
Los Angeles County



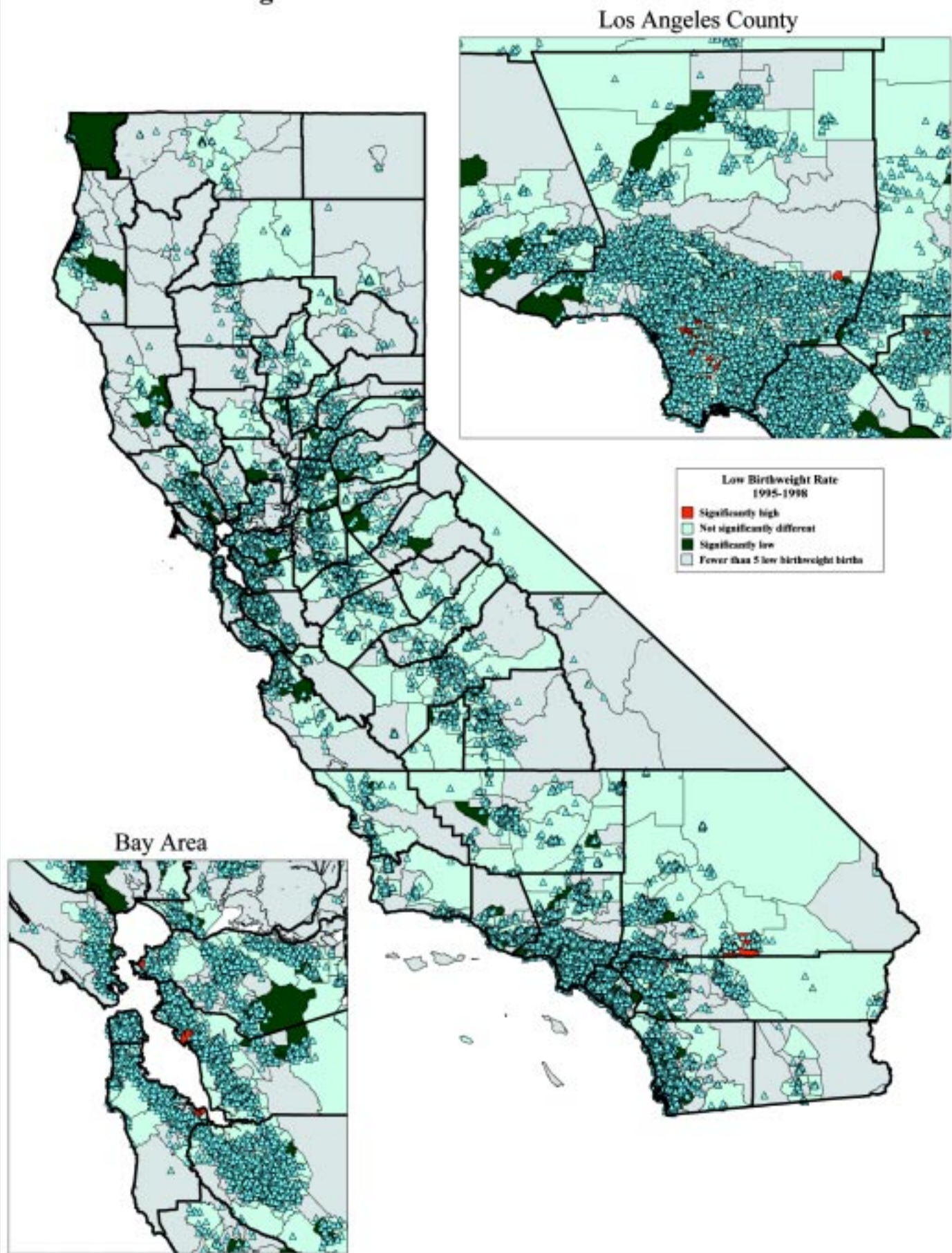
Bay Area



Hispanic Low Birthweight Births

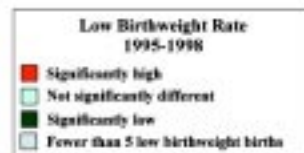
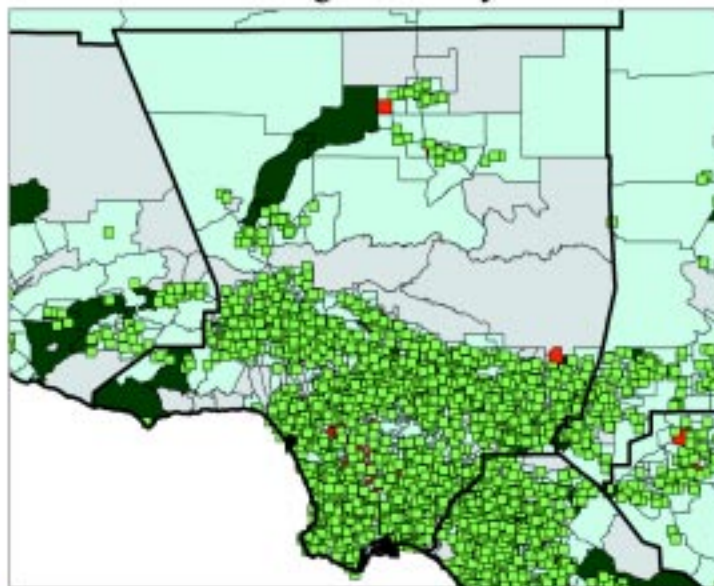
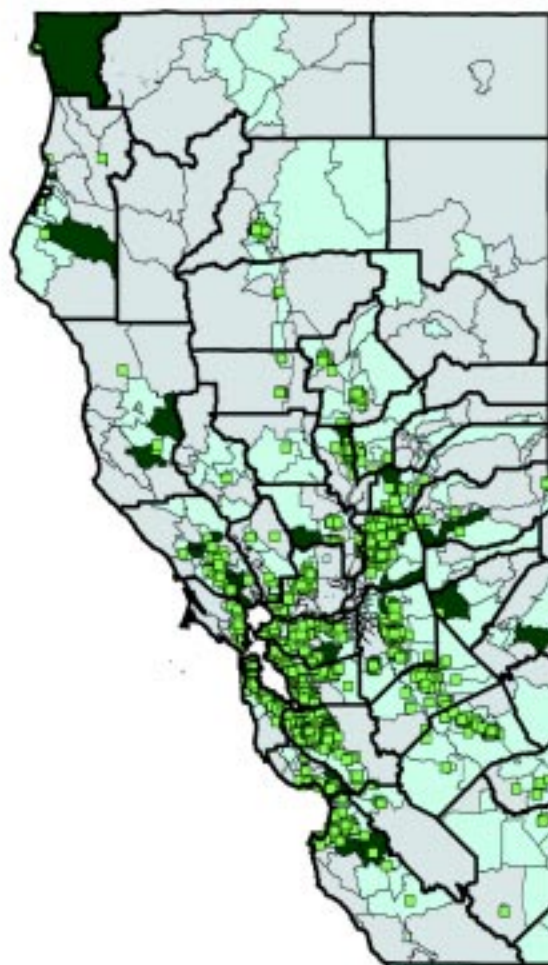


White Low Birthweight Births

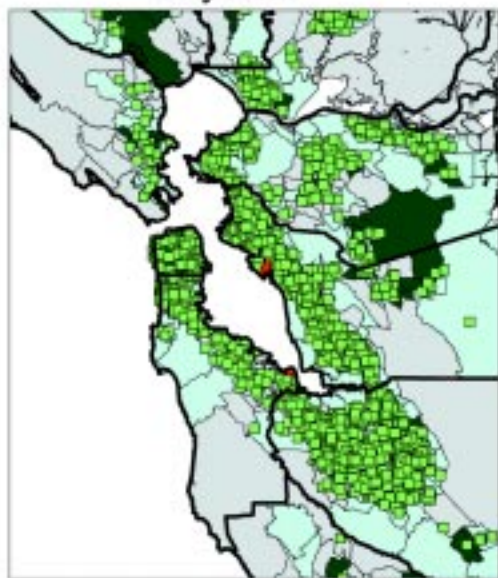


Asian/Pacific Islander Low Birthweight Births

Los Angeles County

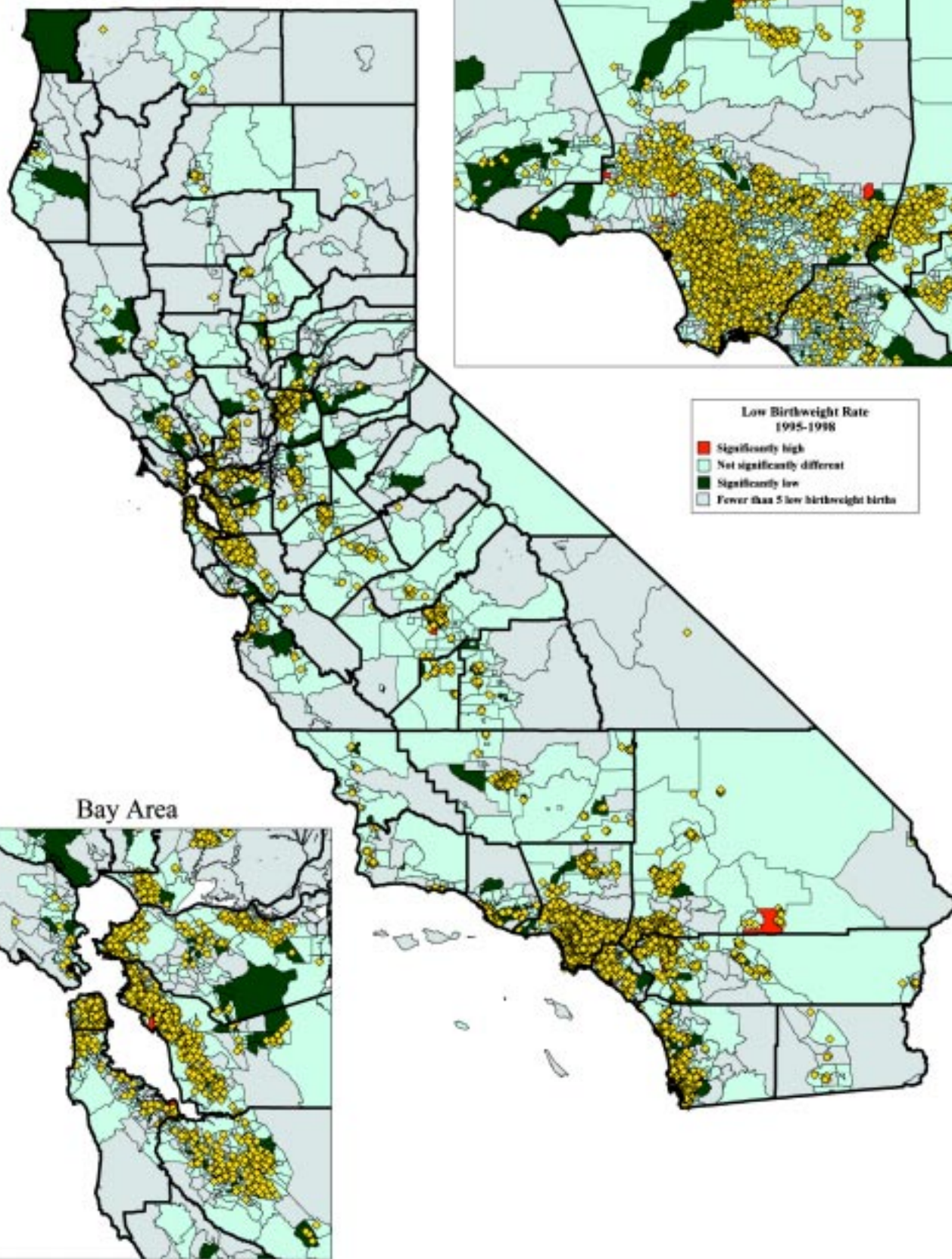
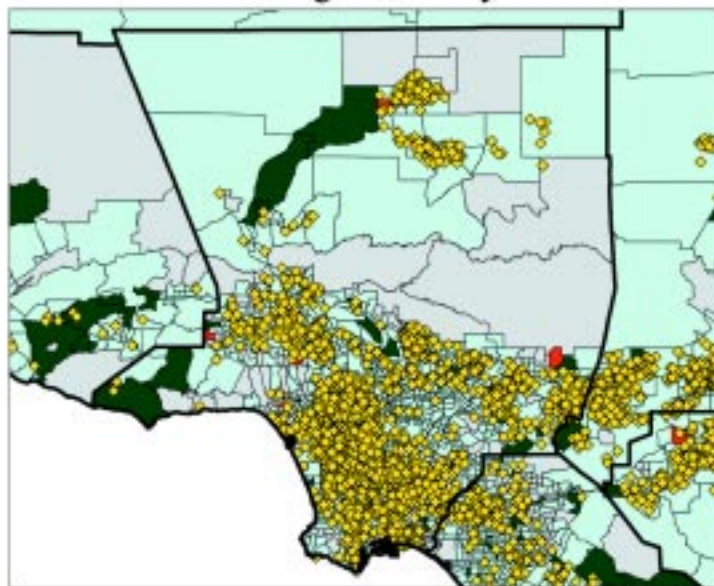


Bay Area

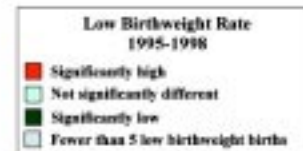
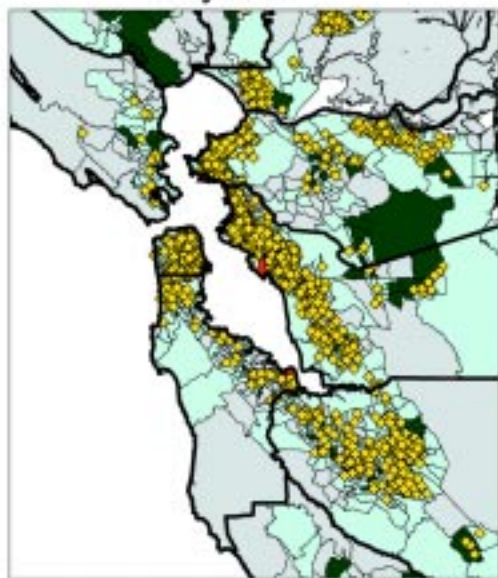


African American Low Birthweight Births

Los Angeles County

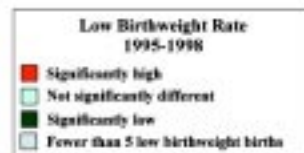
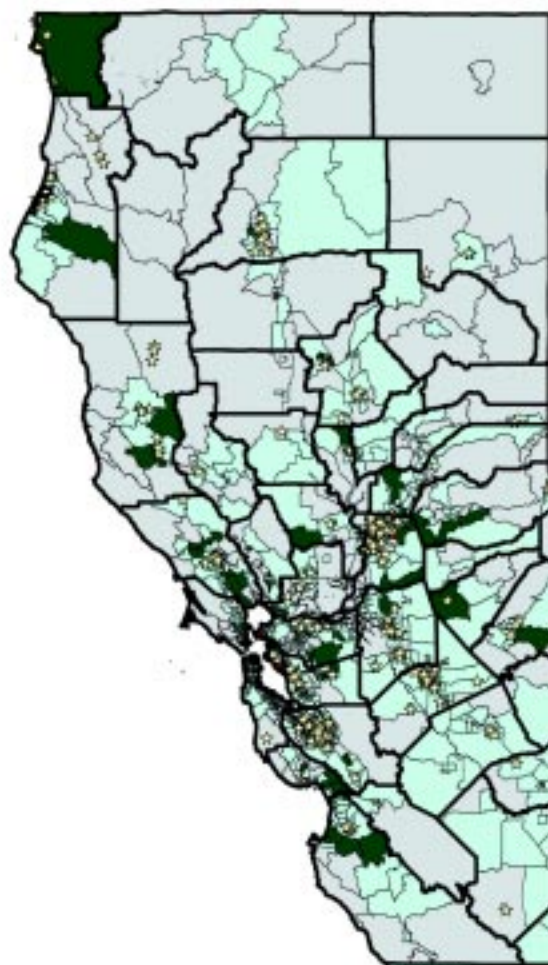
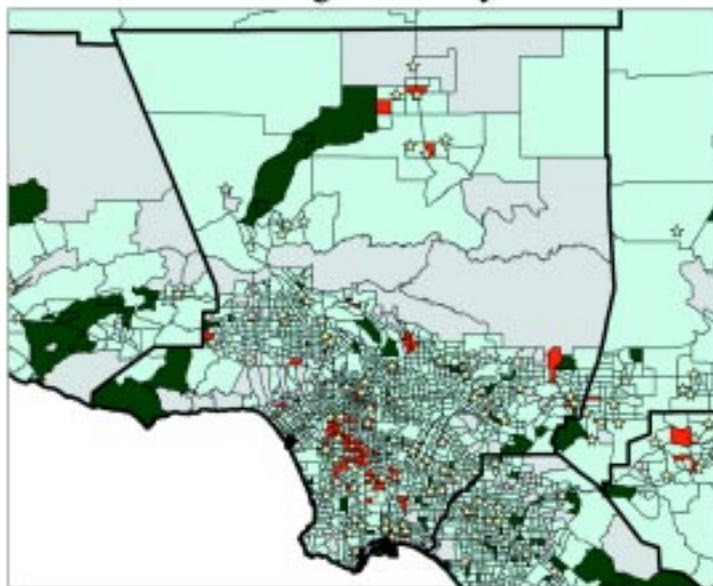


Bay Area

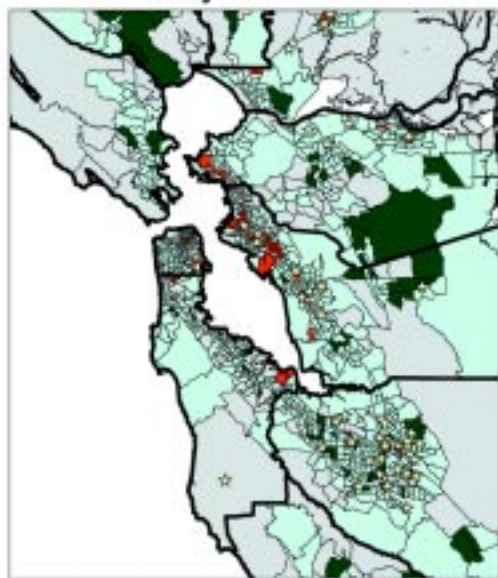


American Indian/Alaska Native Low Birthweight Births

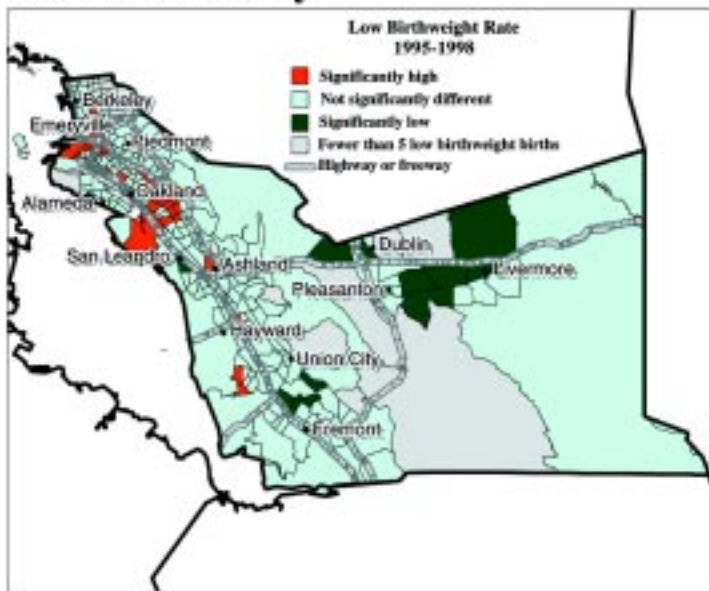
Los Angeles County



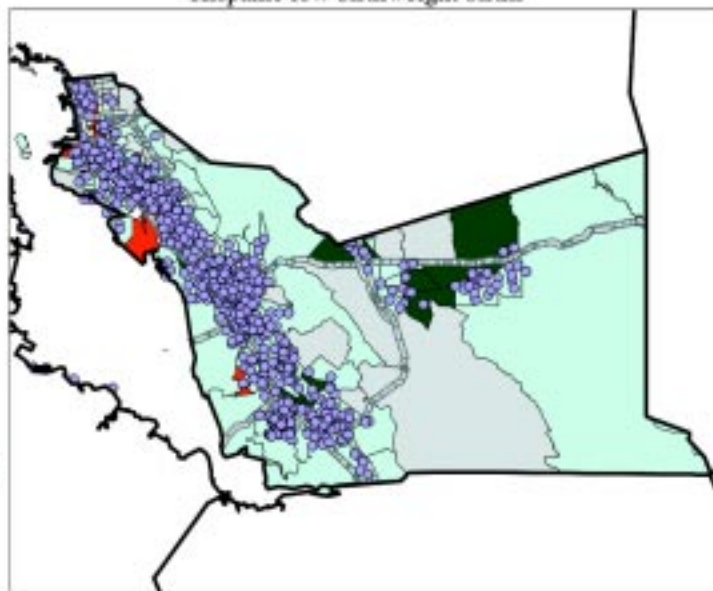
Bay Area



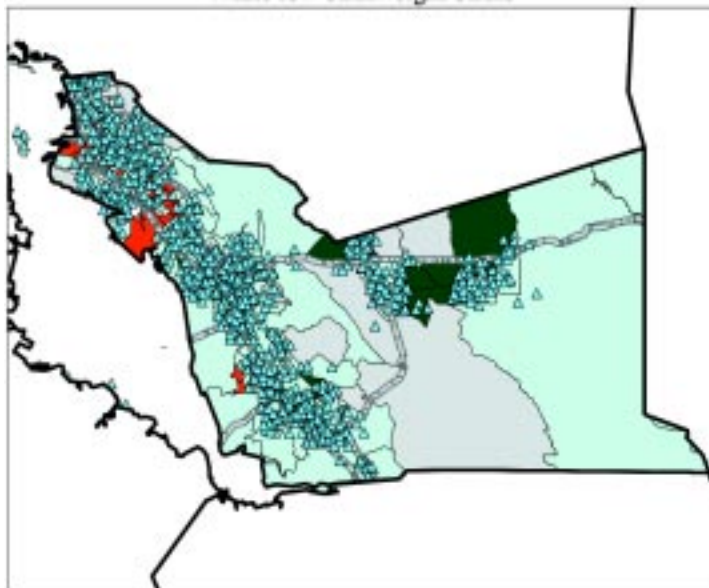
Alameda County



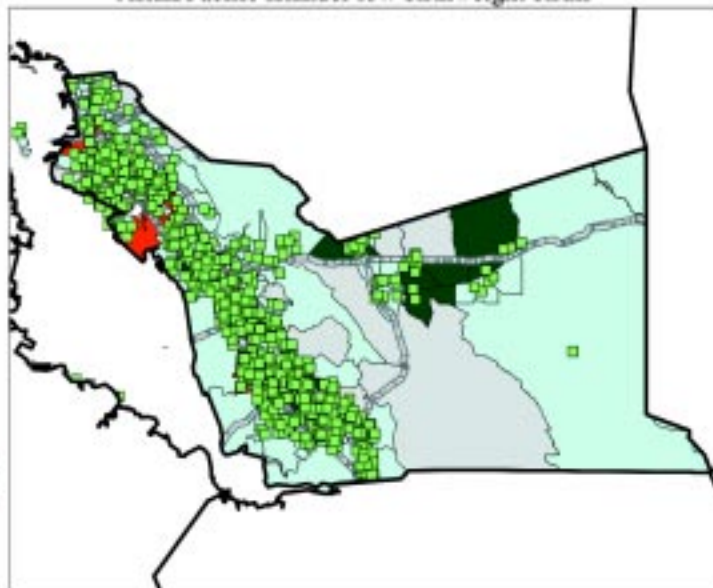
Hispanic low birthweight births



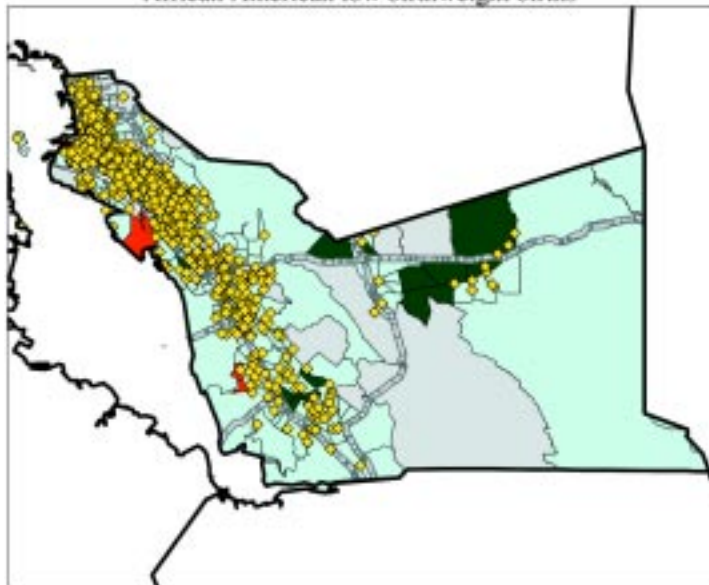
White low birthweight births



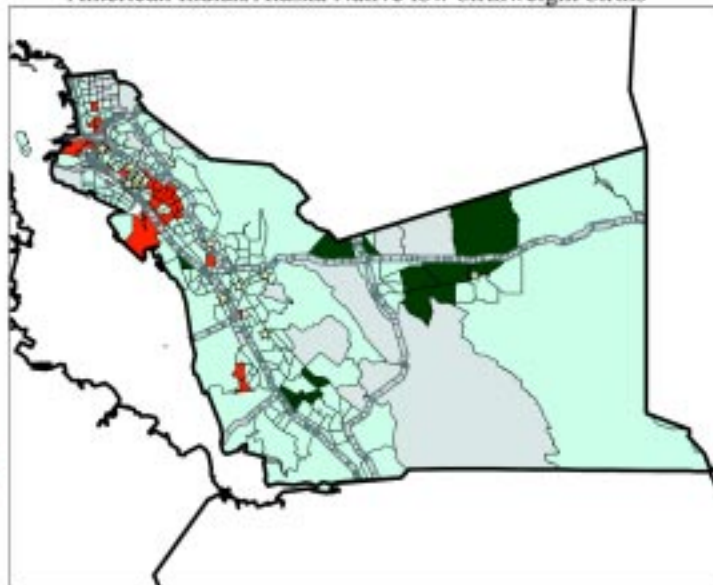
Asian/Pacific Islander low birthweight births



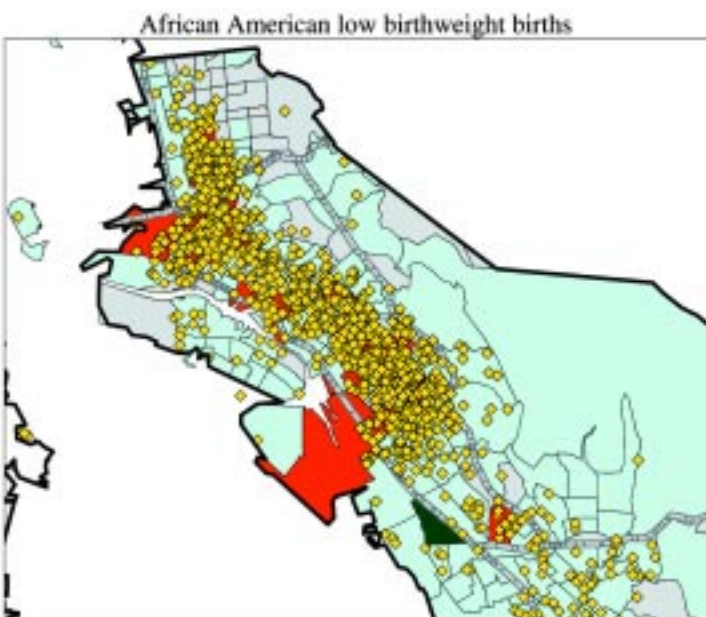
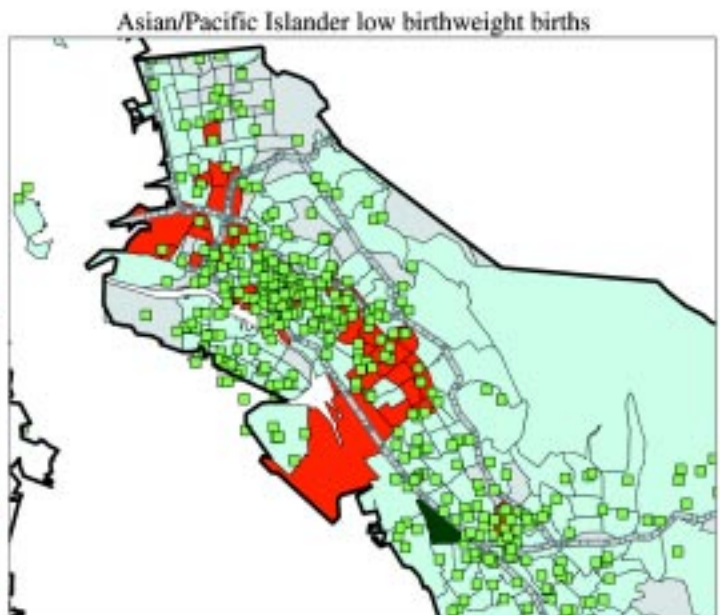
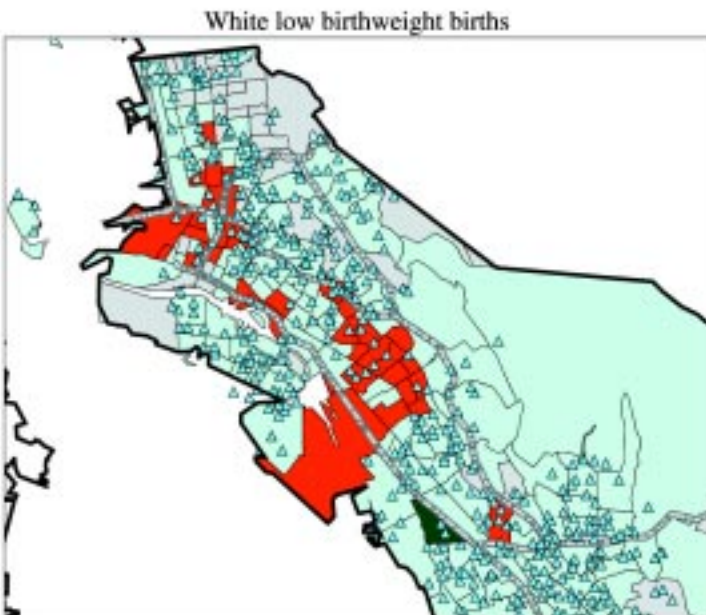
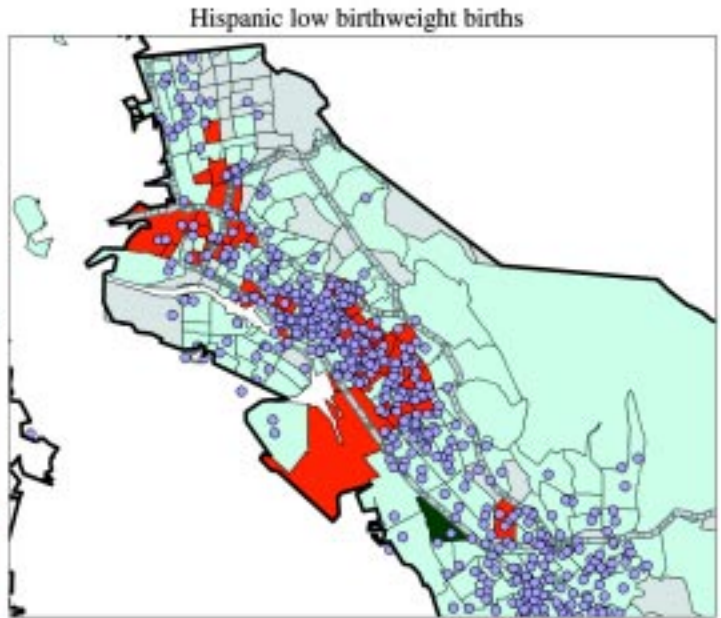
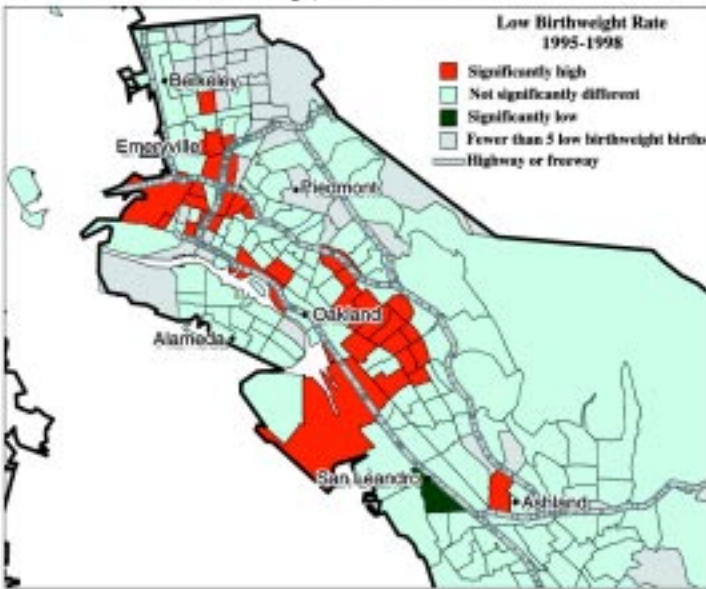
African American low birthweight births



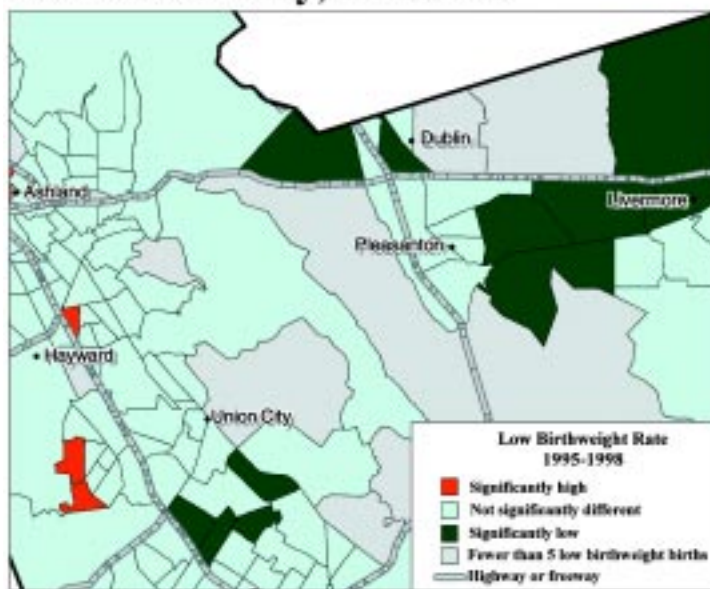
American Indian/Alaska Native low birthweight births



Alameda County, continued



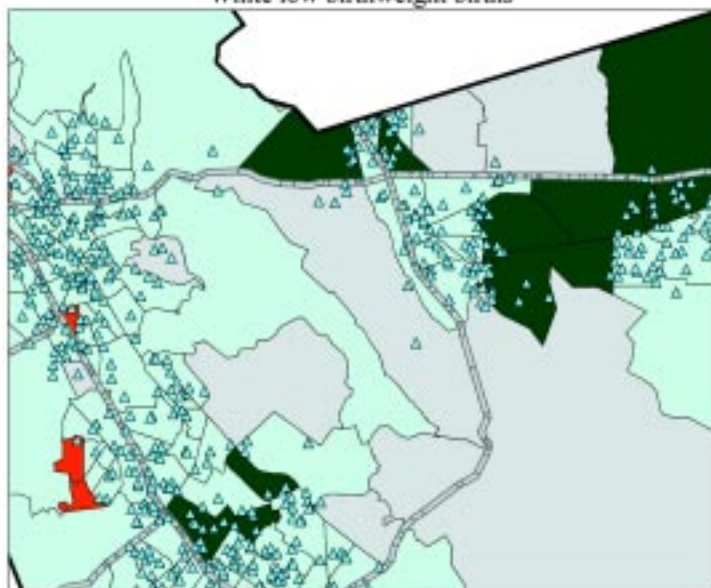
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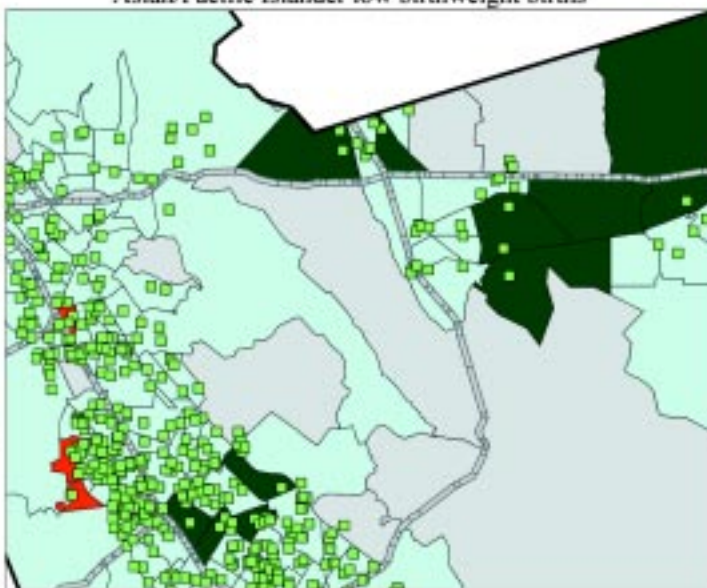
Hispanic low birthweight births



White low birthweight births



Asian/Pacific Islander low birthweight births



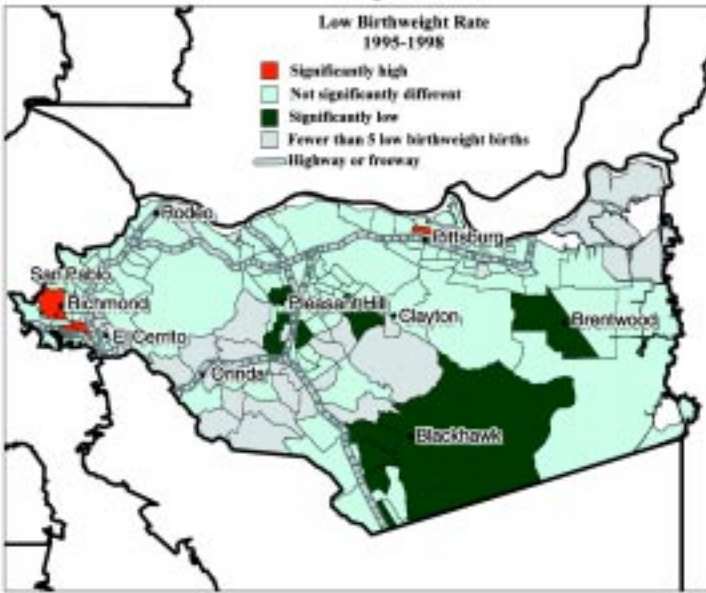
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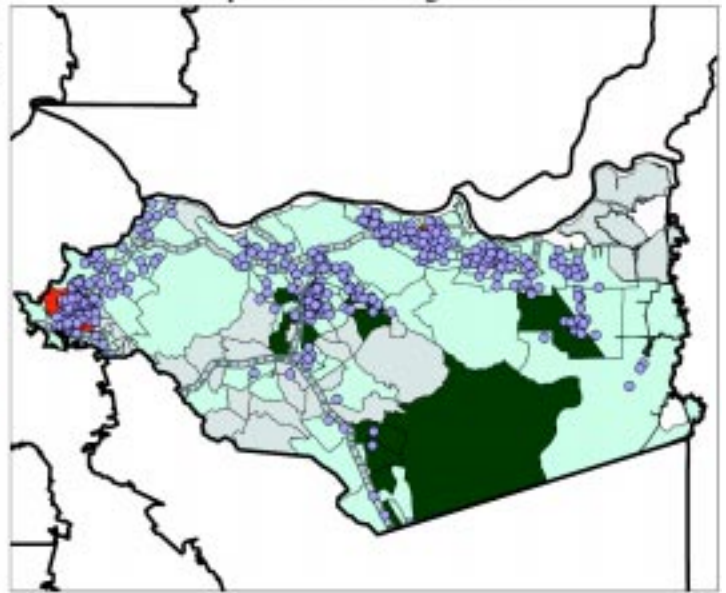
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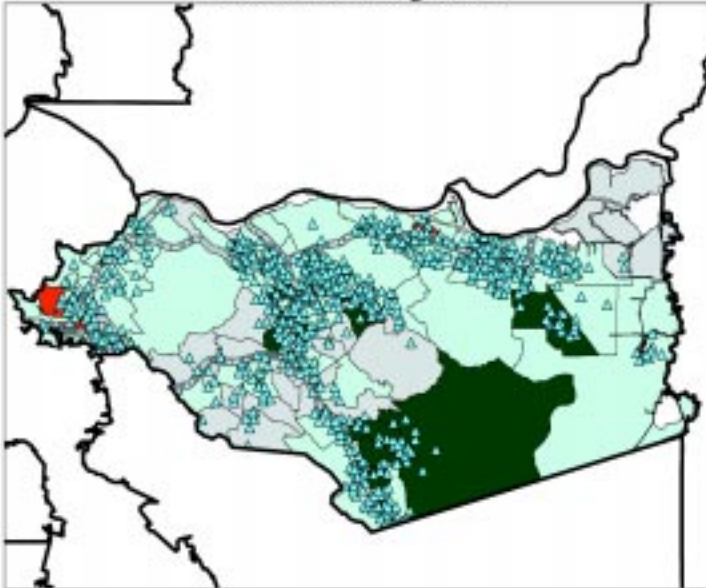
Contra Costa County



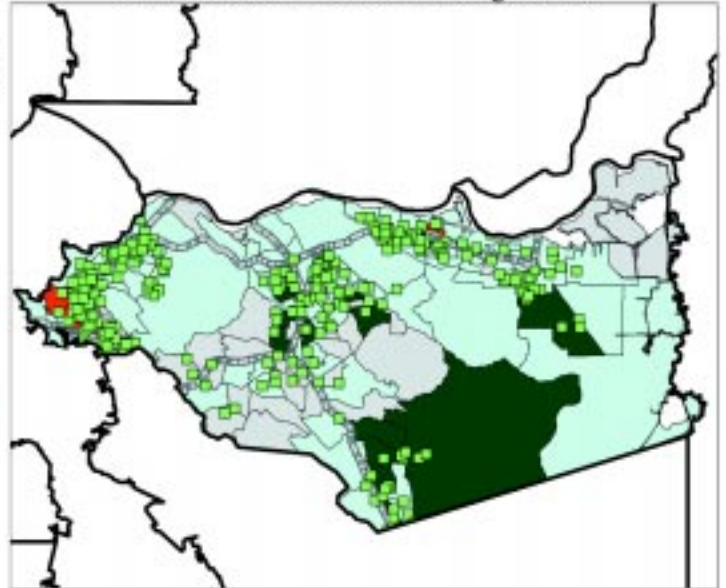
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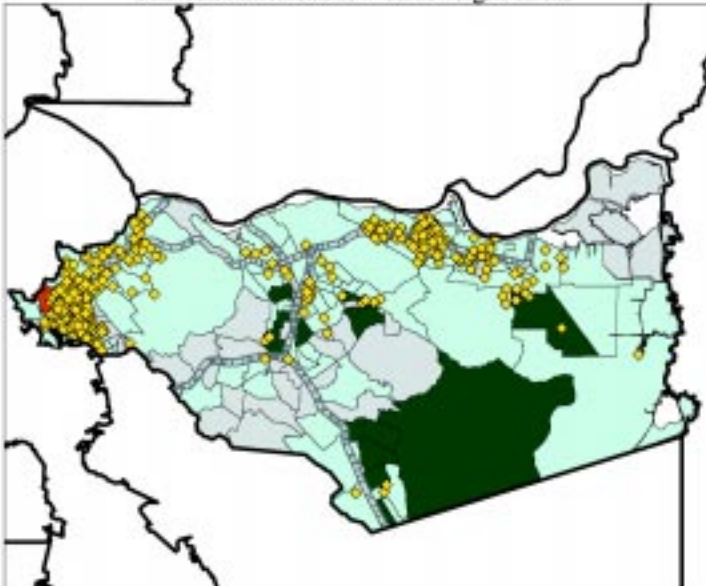
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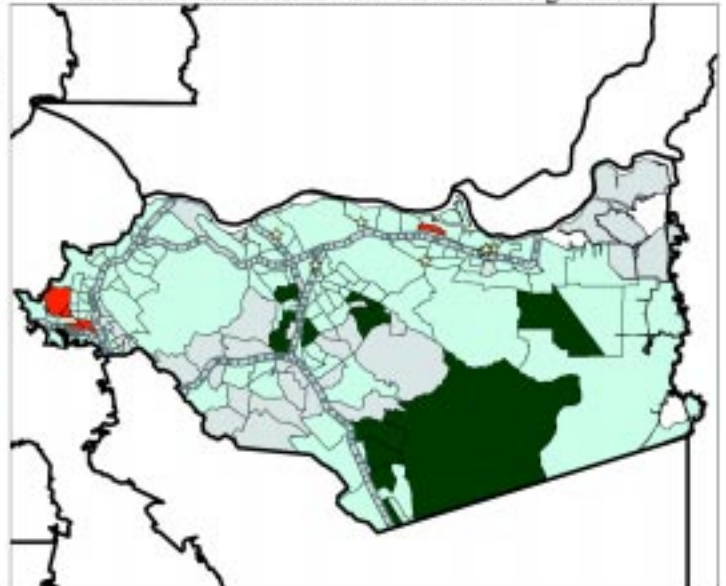
Asian/Pacific Islander low birthweight births



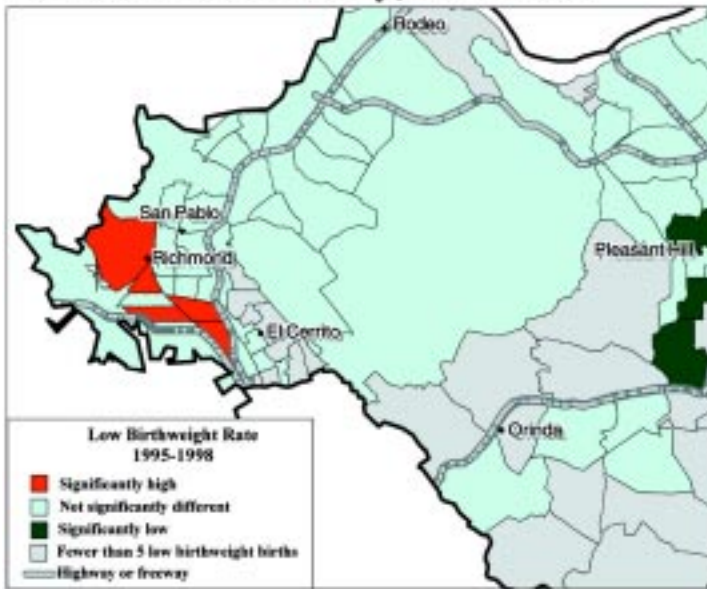
African American low birthweight births



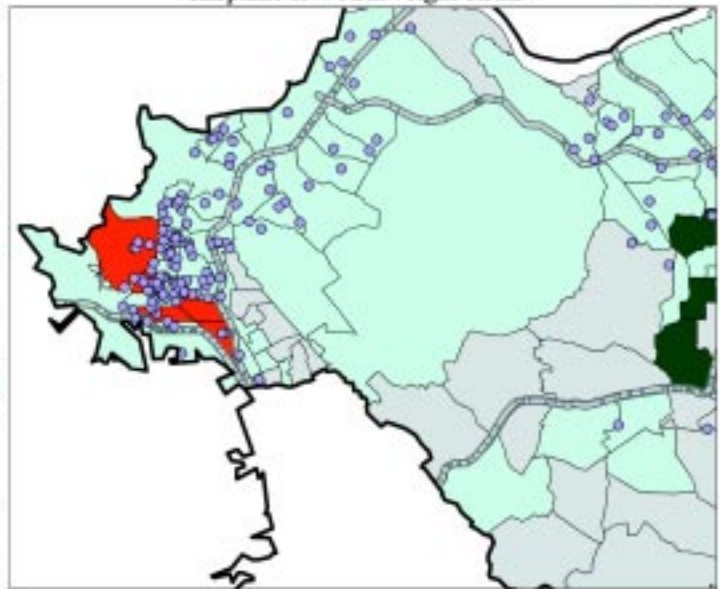
American Indian/Alaska Native low birthweight births



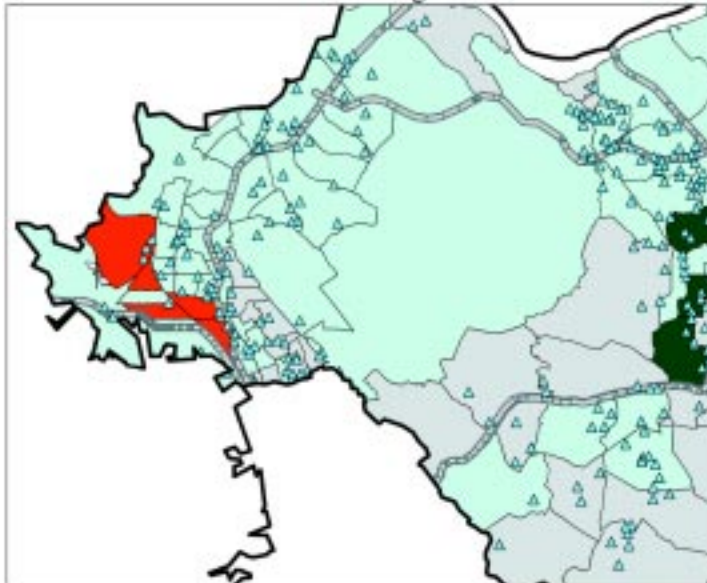
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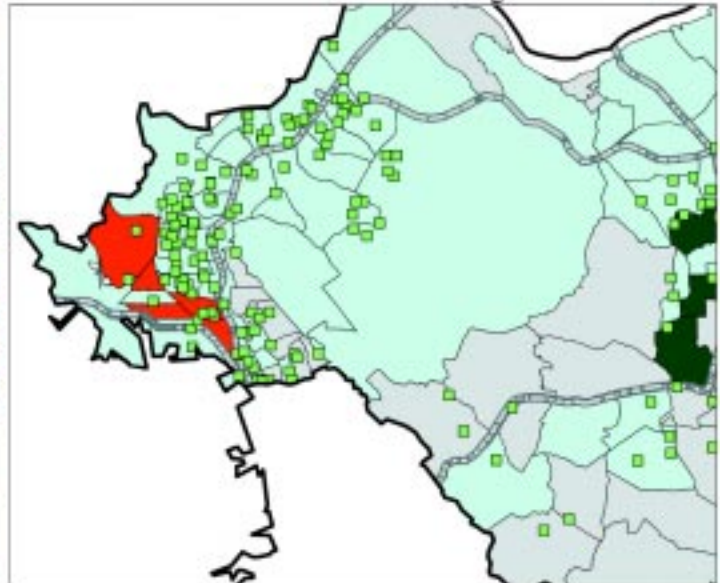
Hispanic low birthweight births



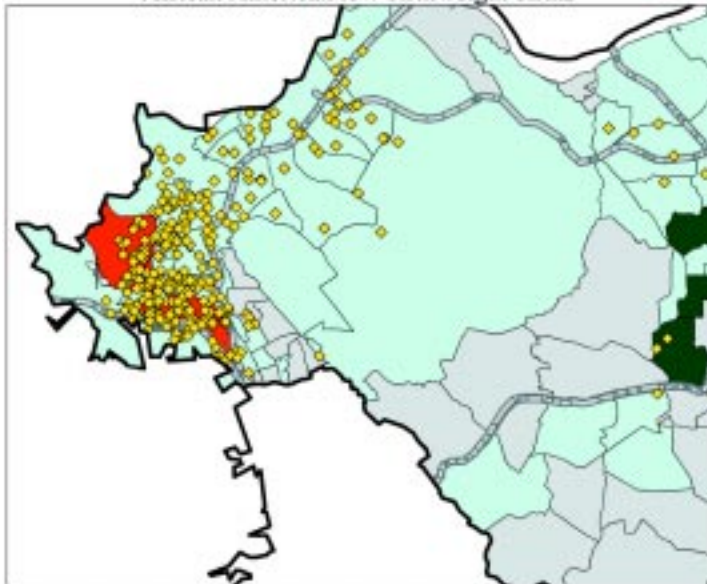
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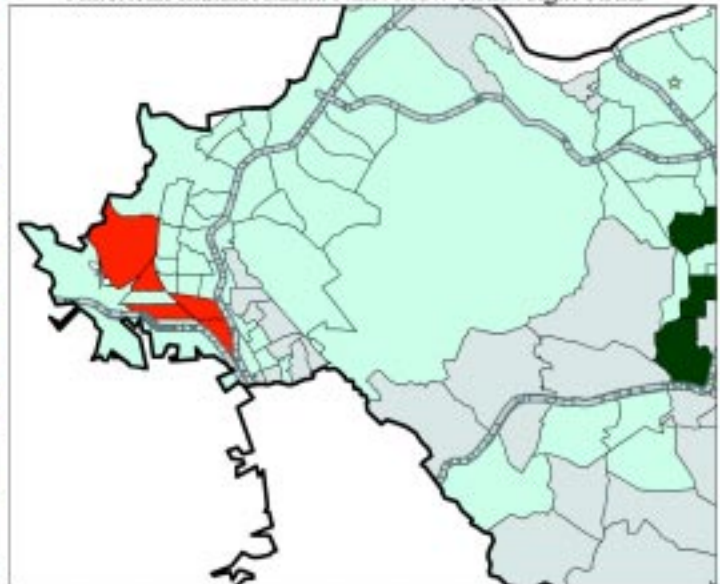
Asian/Pacific Islander low birthweight births



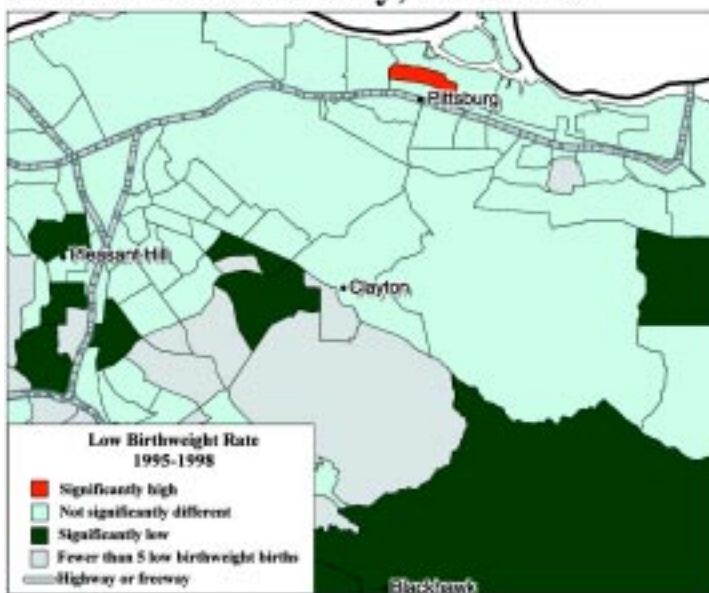
African American low birthweight births



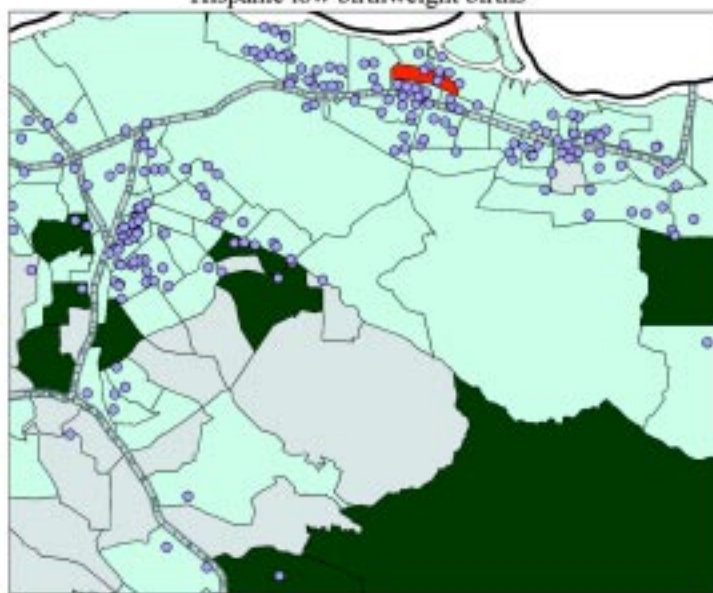
American Indian/Alaska Native low birthweight births



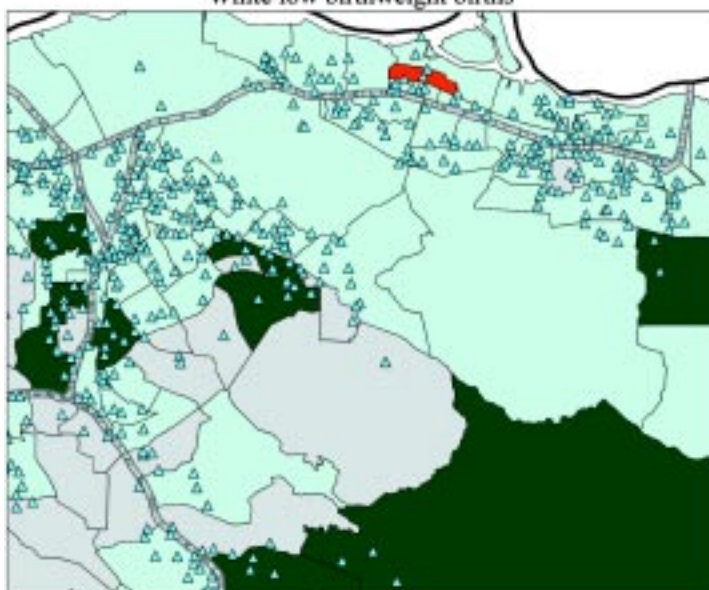
Contra Costa County, continued



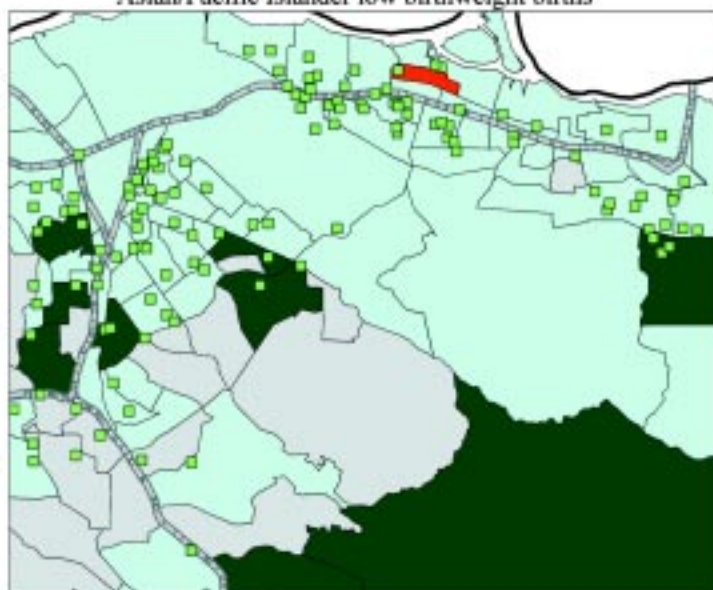
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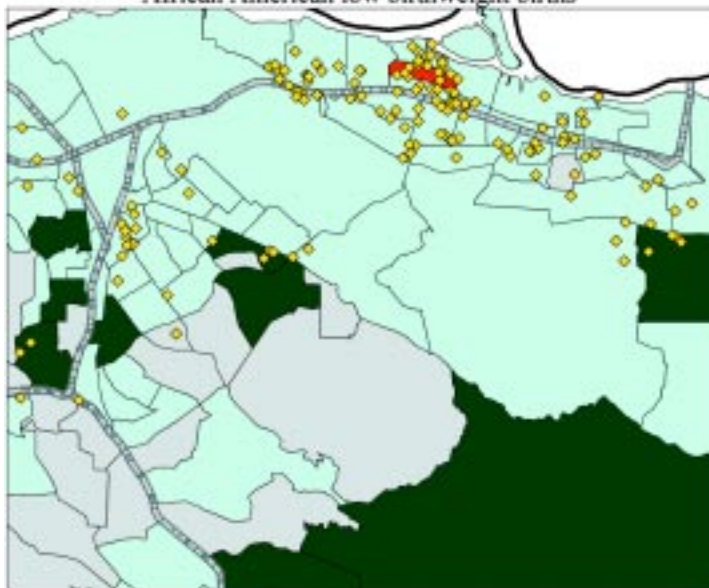
White low birthweight births



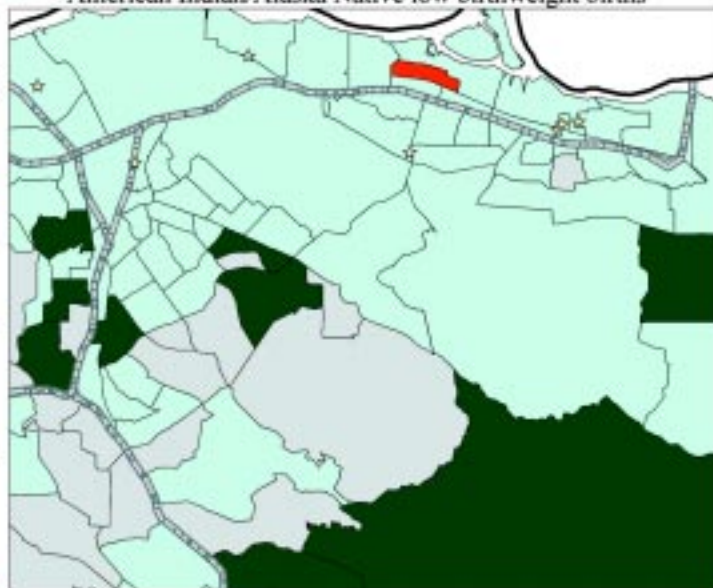
Asian/Pacific Islander low birthweight births



African American low birthweight births

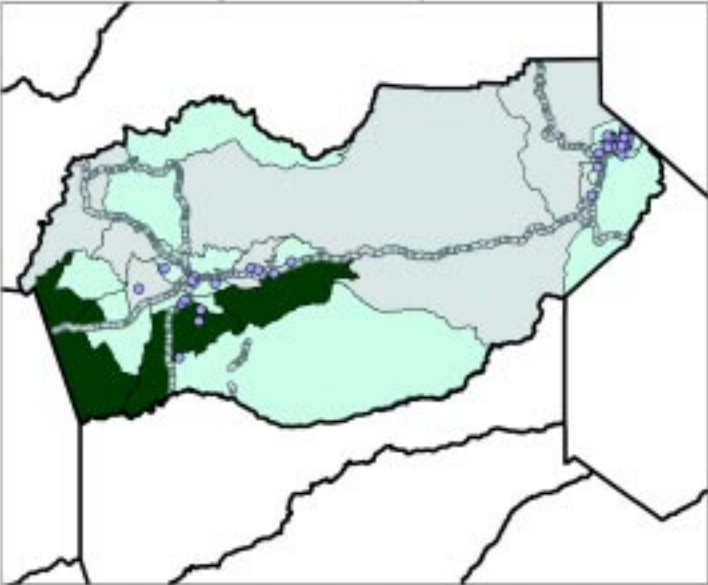
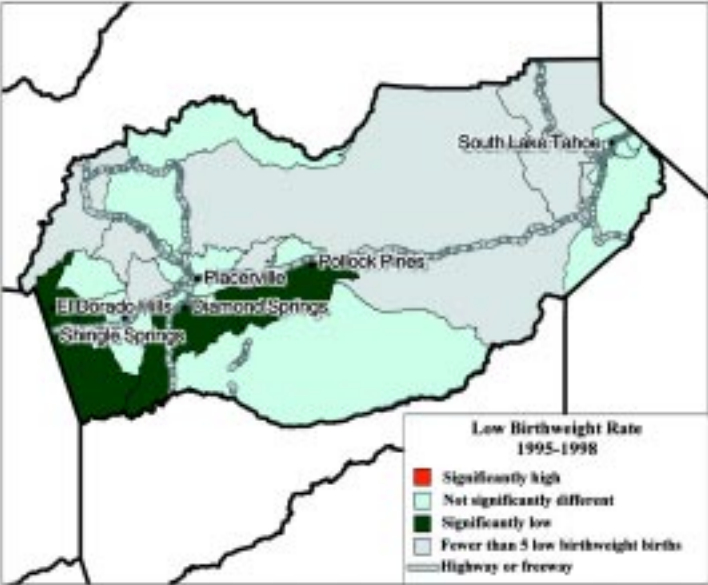


American Indian/Alaska Native low birthweight births

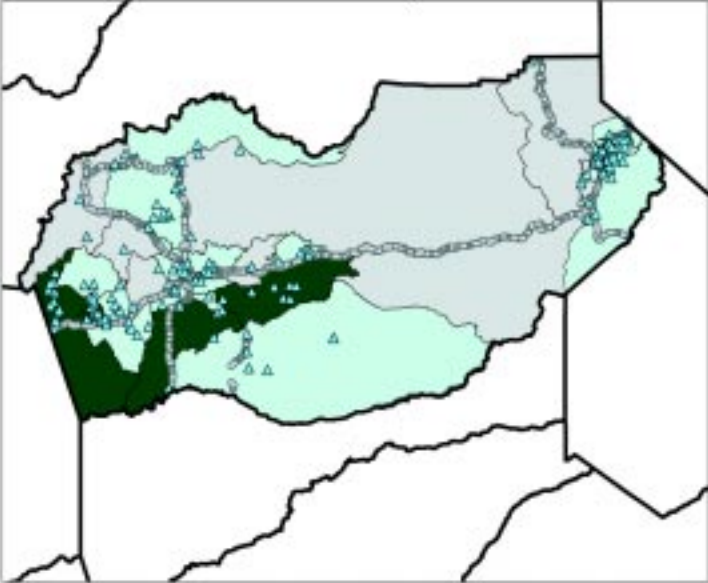


El Dorado County

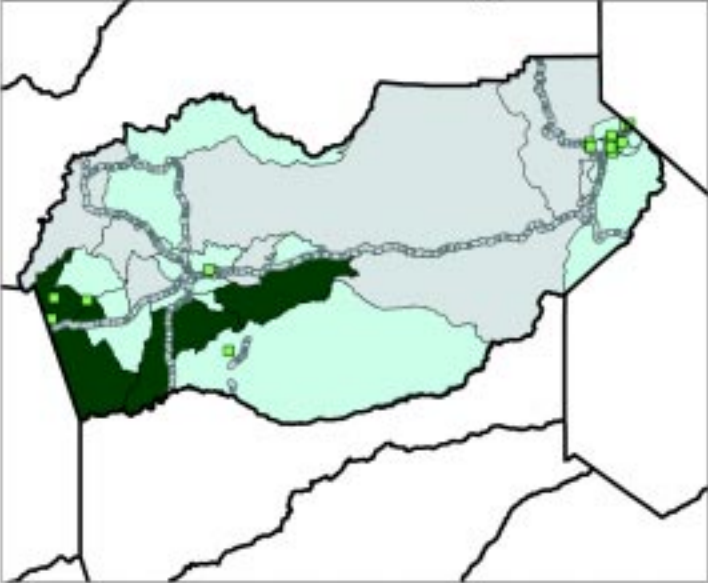
Hispanic low birthweight births



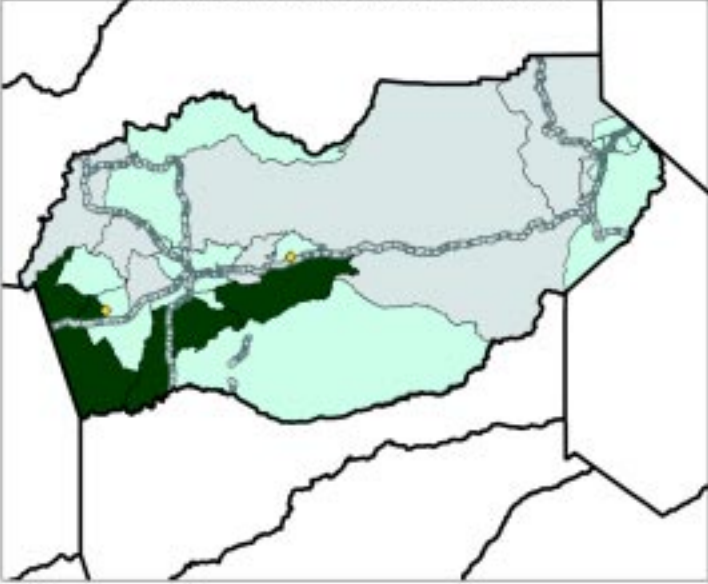
White low birthweight births



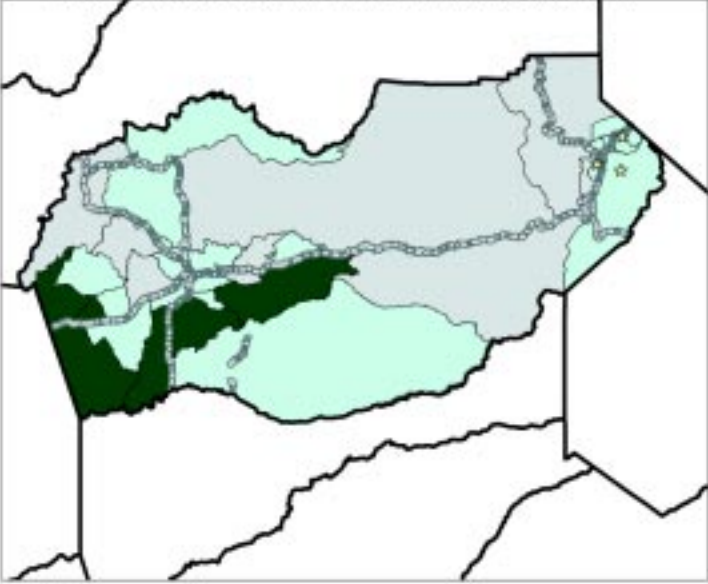
Asian/Pacific Islander low birthweight births



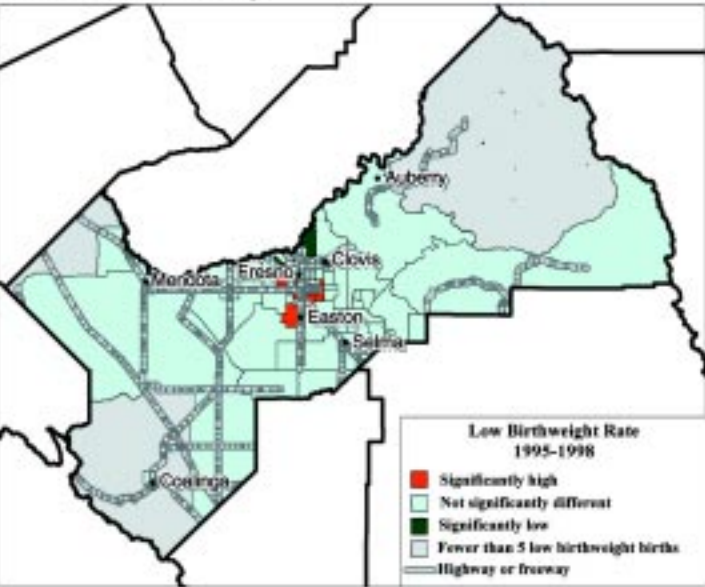
African American low birthweight births



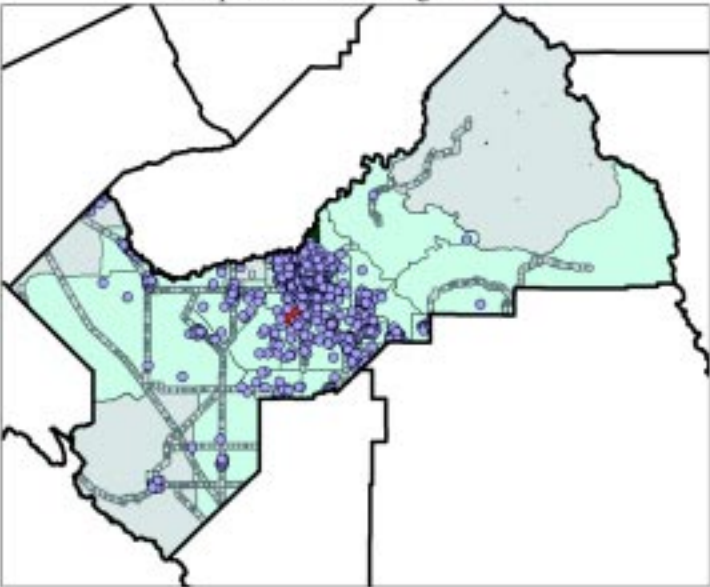
American Indian/Alaska Native low birthweight births



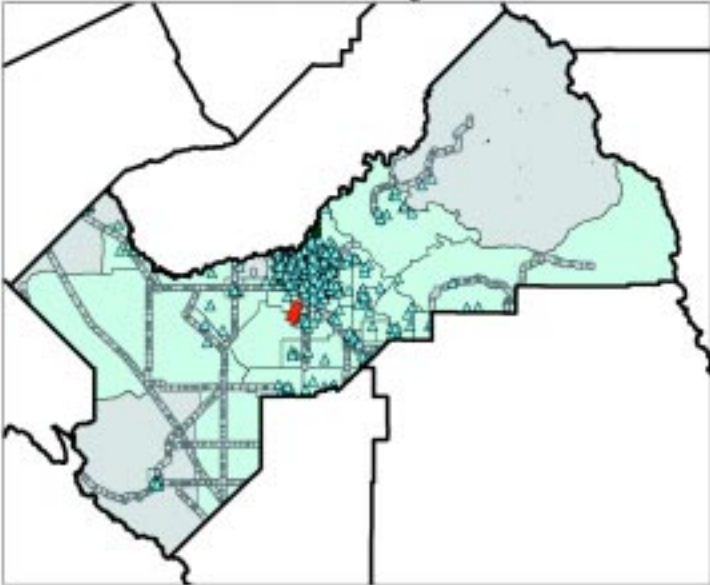
Fresno County



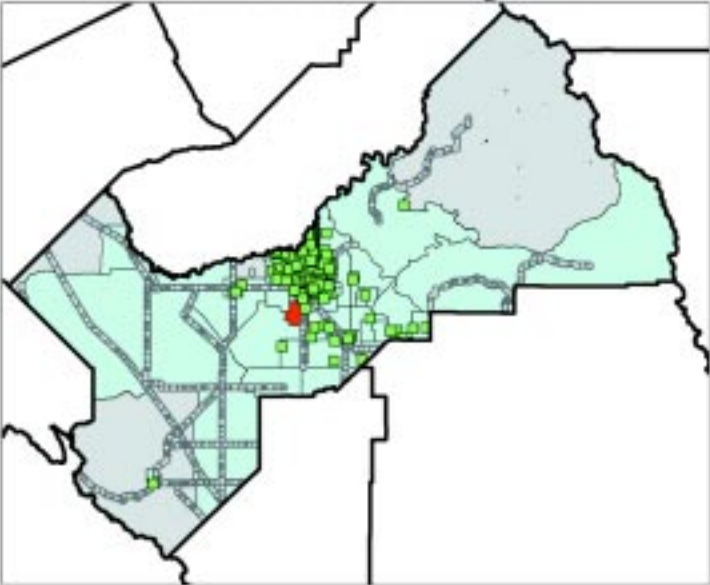
Hispanic low birthweight births



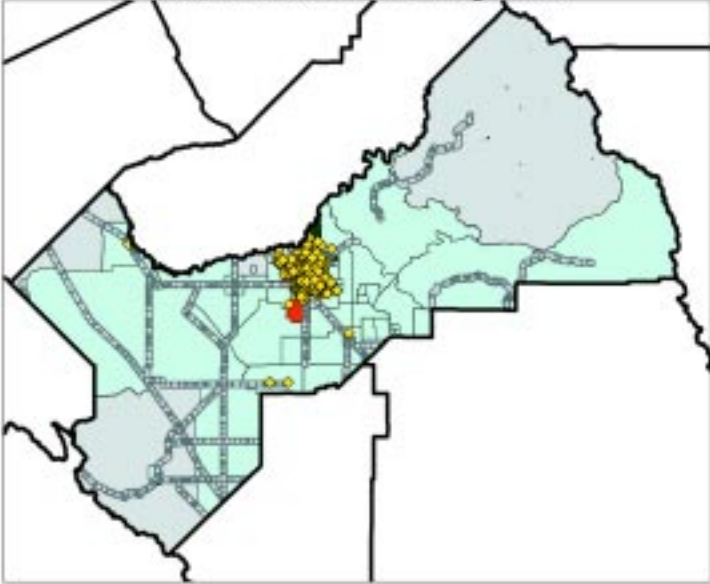
White low birthweight births



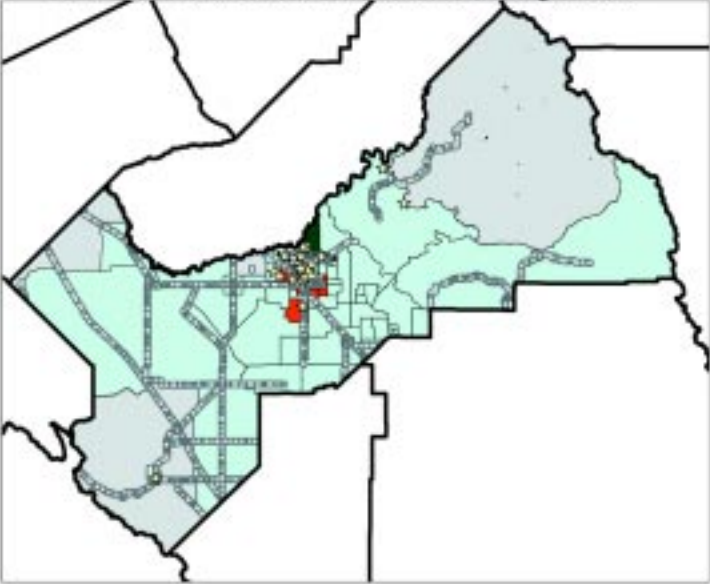
Asian/Pacific Islander low birthweight births



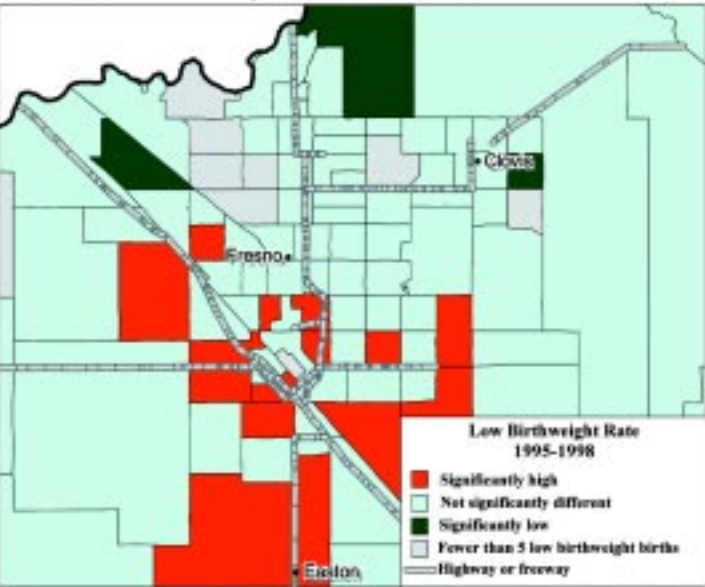
African American low birthweight births



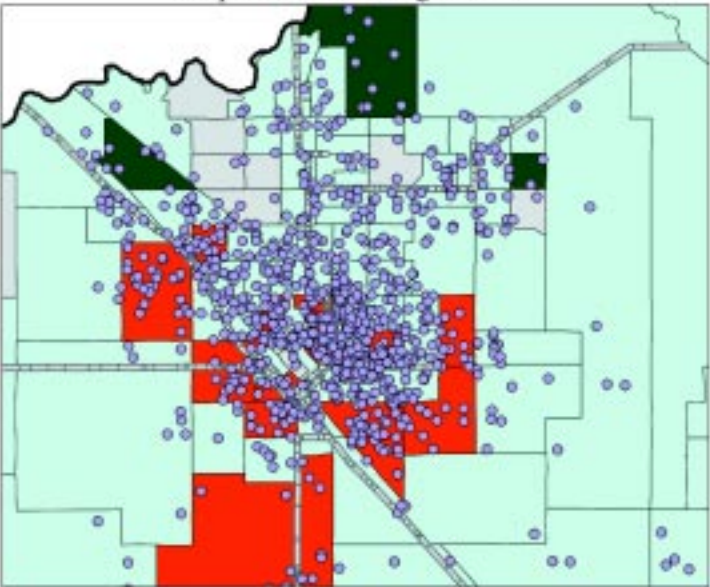
American Indian/Alaska Native low birthweight births



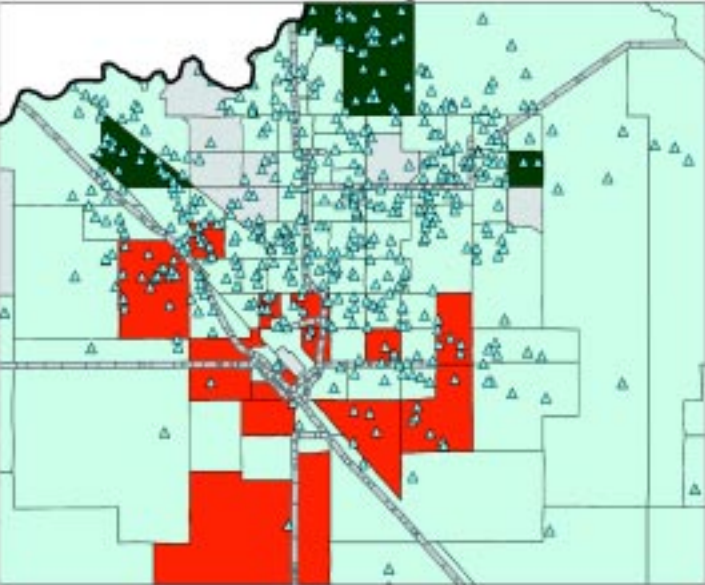
Fresno County, continued



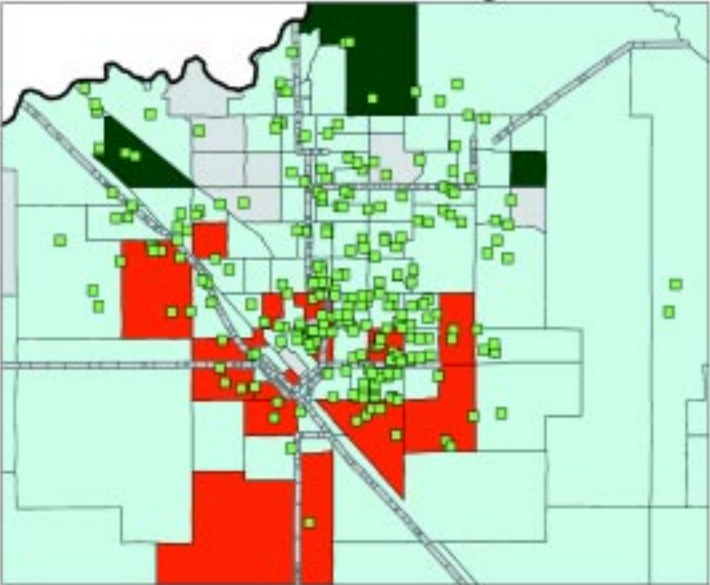
Hispanic low birthweight births



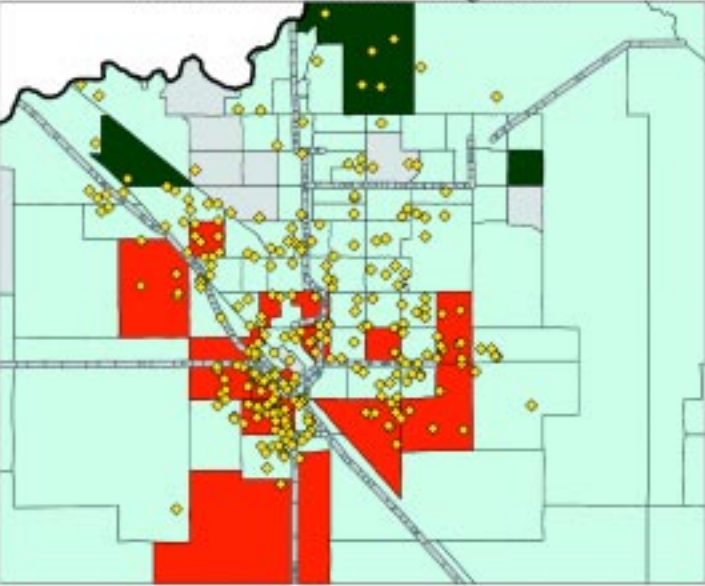
White low birthweight births



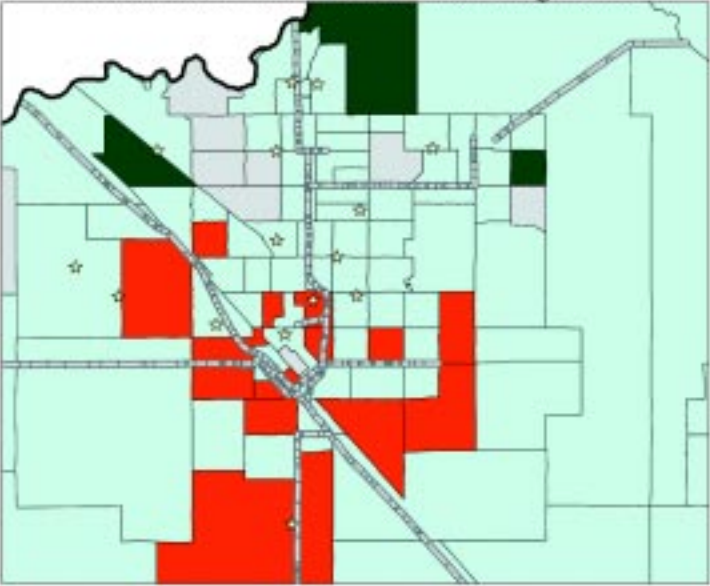
Asian/Pacific Islander low birthweight births



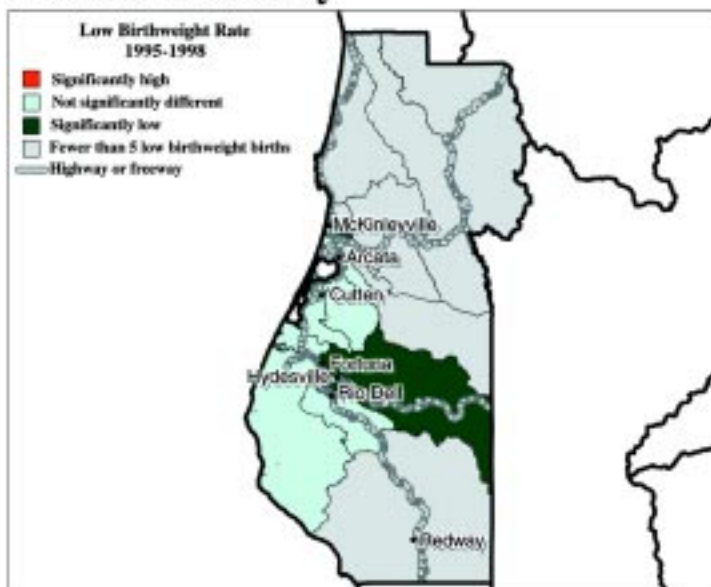
African American low birthweight births



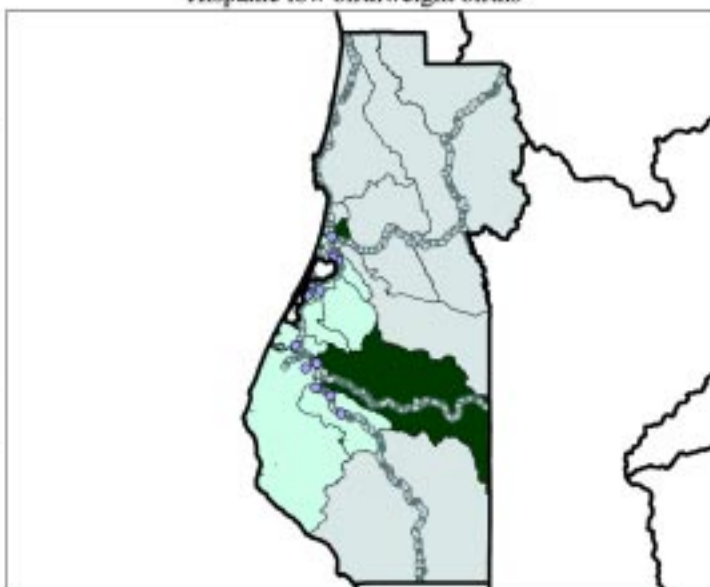
American Indian/Alaska Native low birthweight births



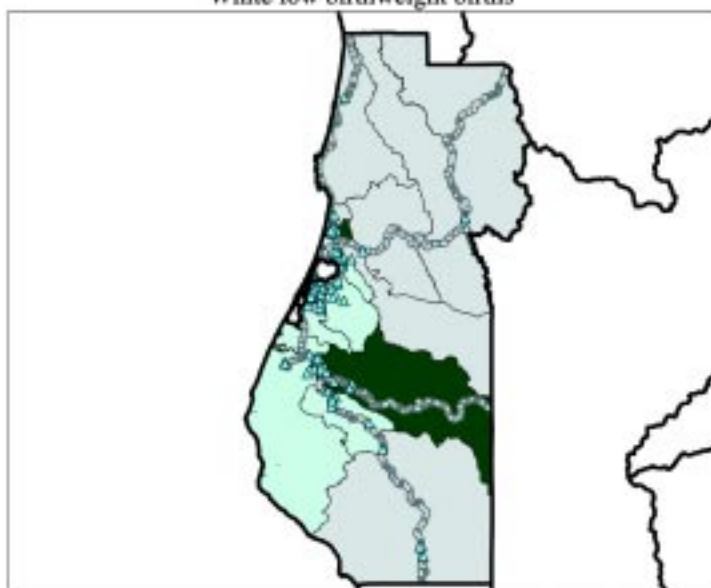
Humboldt County



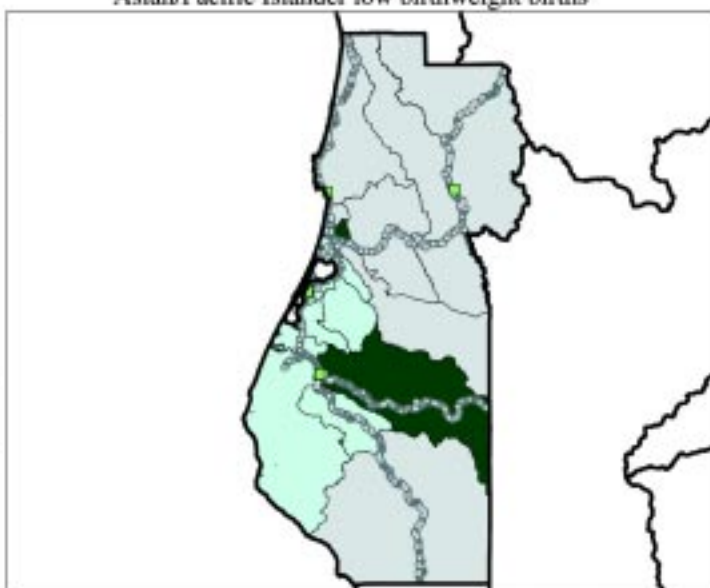
Hispanic low birthweight births



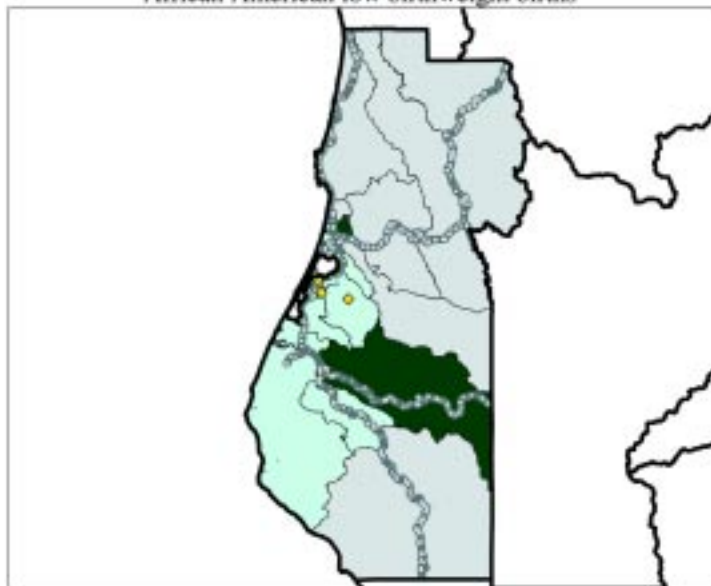
White low birthweight births



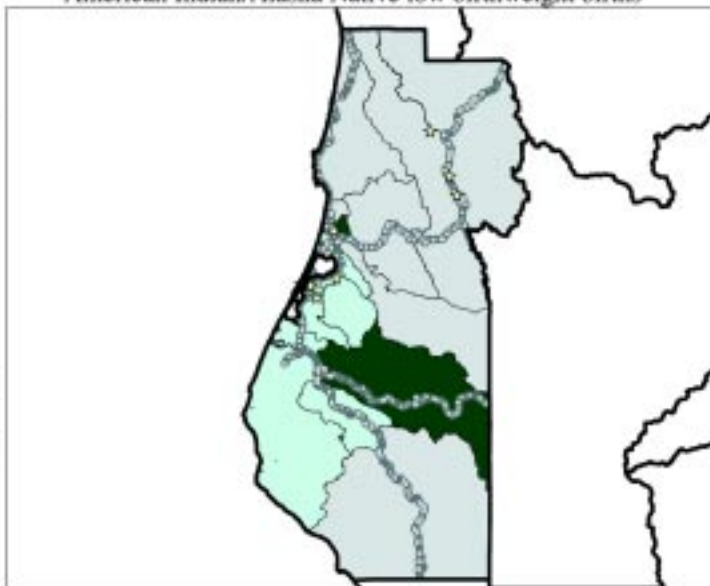
Asian/Pacific Islander low birthweight births



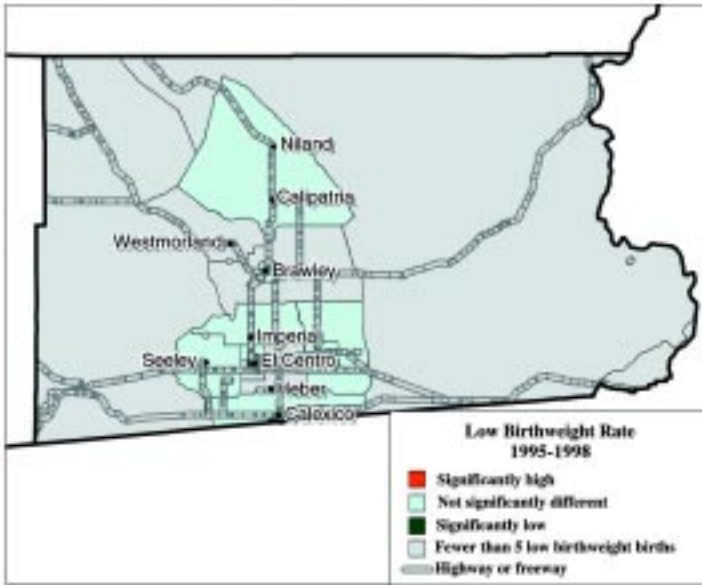
African American low birthweight births



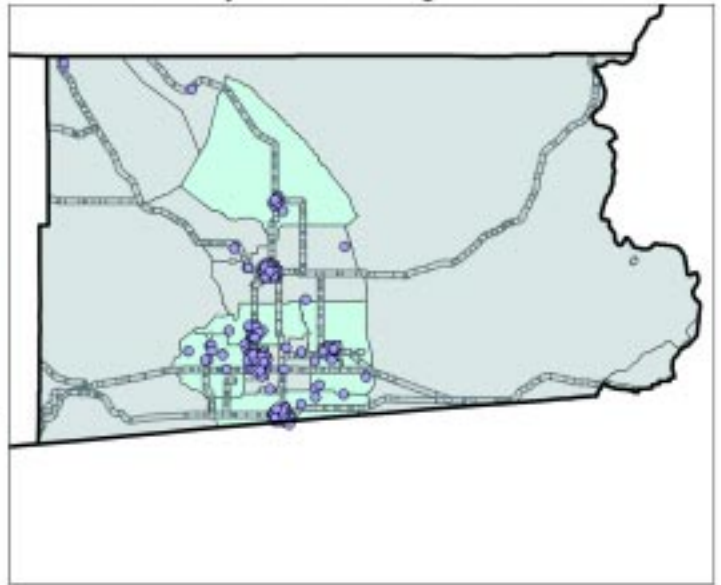
American Indian/Alaska Native low birthweight births



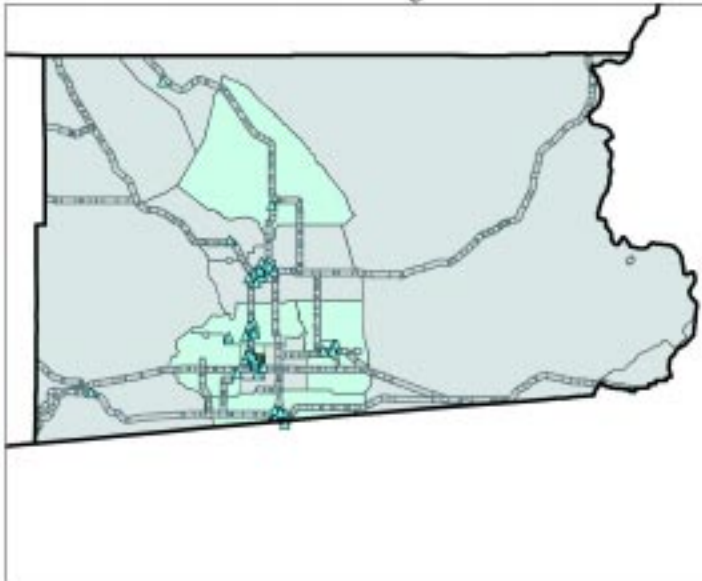
Imperial County



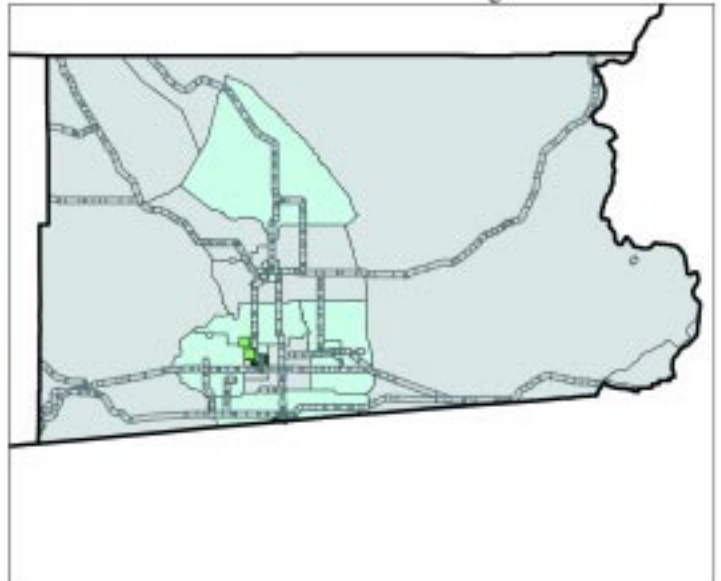
Hispanic low birthweight births



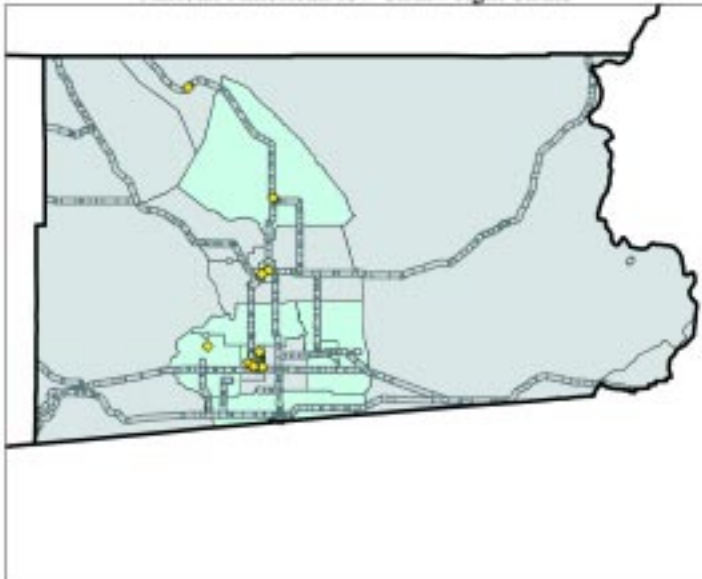
White low birthweight births



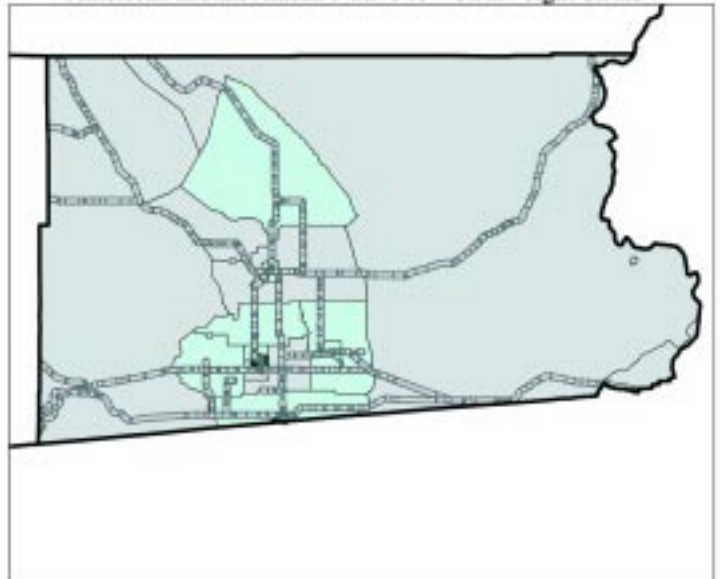
Asian/Pacific Islander low birthweight births



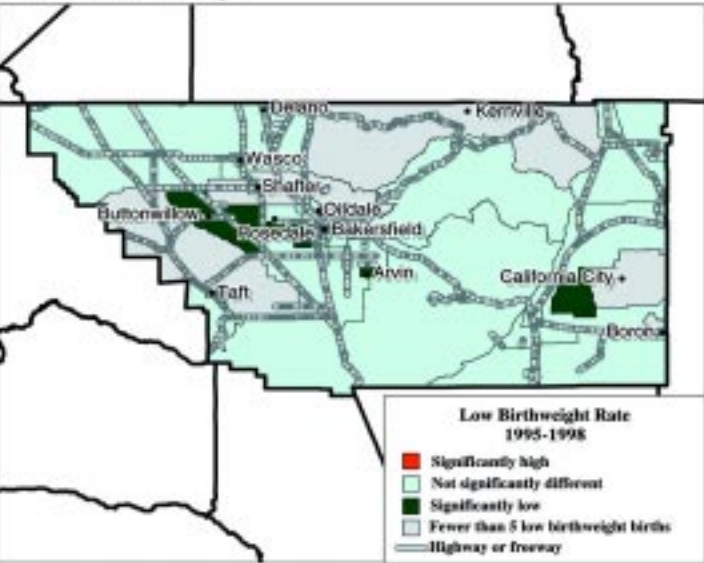
African American low birthweight births



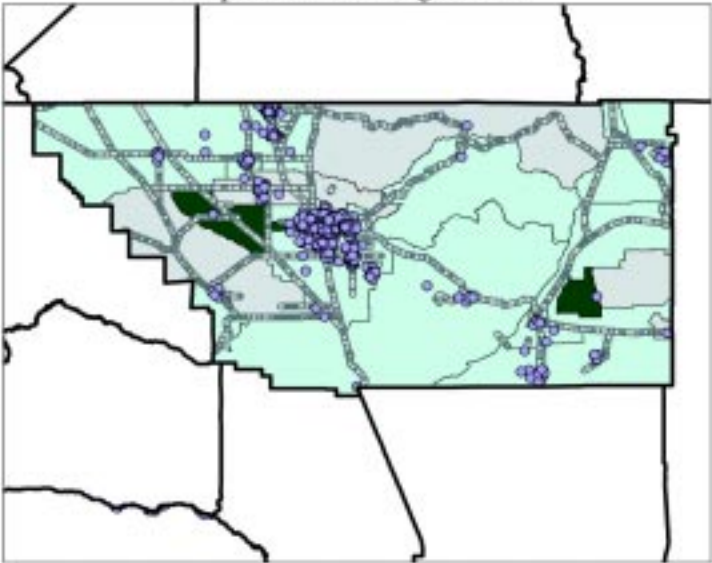
American Indian/Alaska Native low birthweight births



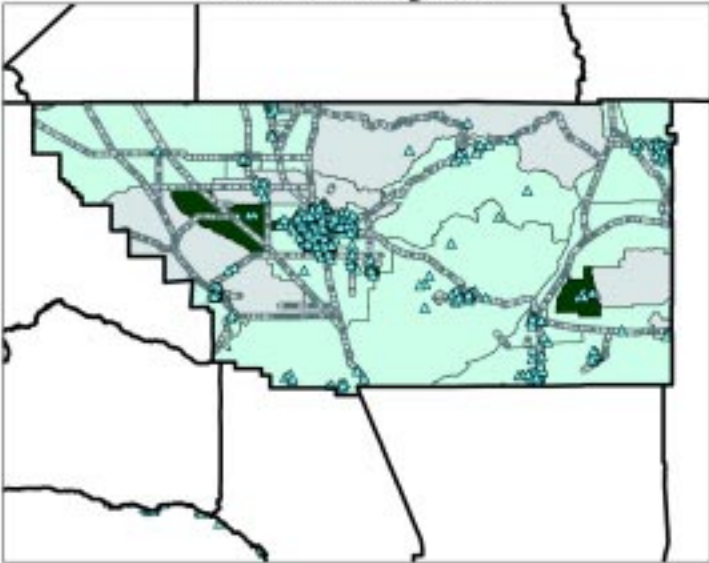
Kern County



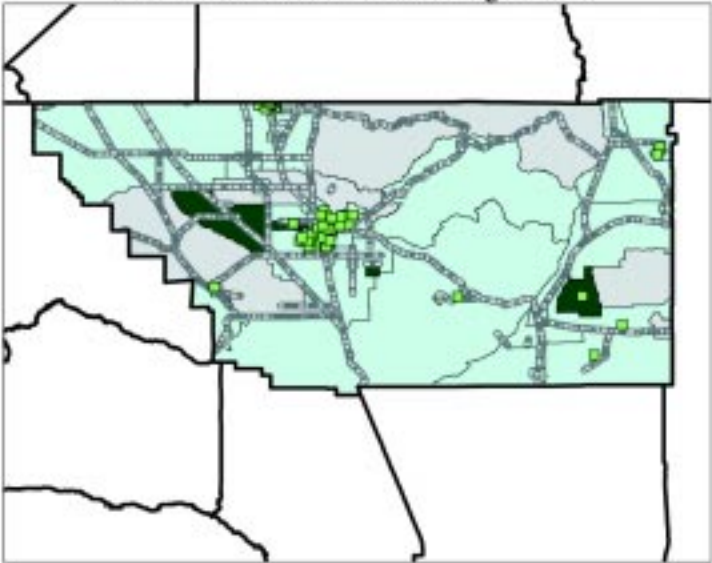
Hispanic low birthweight births



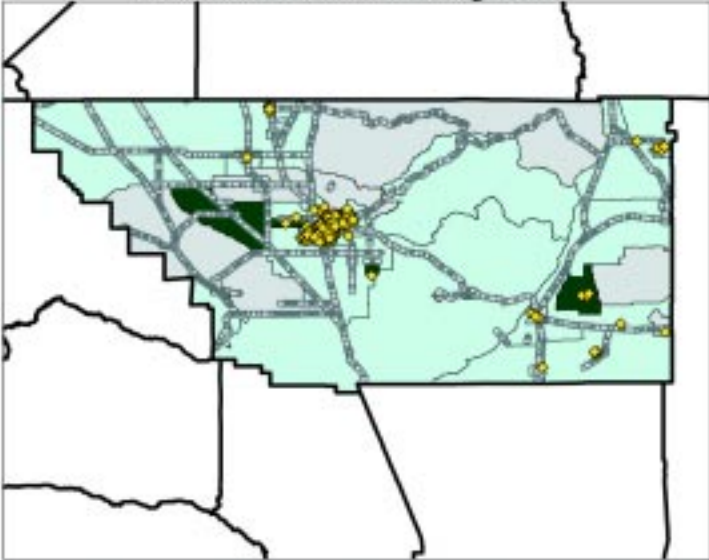
White low birthweight births



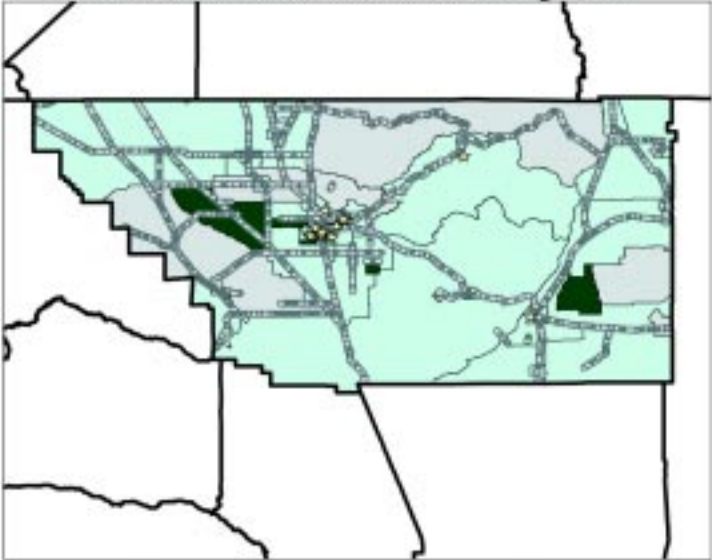
Asian/Pacific Islander low birthweight births



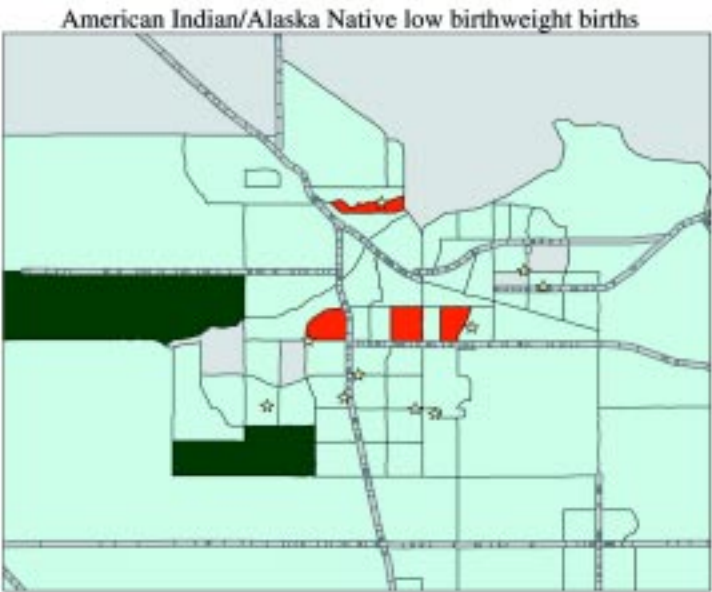
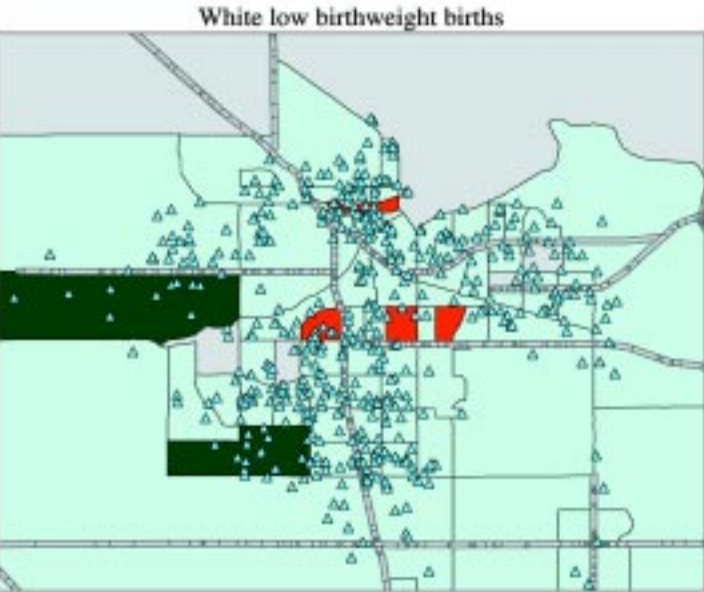
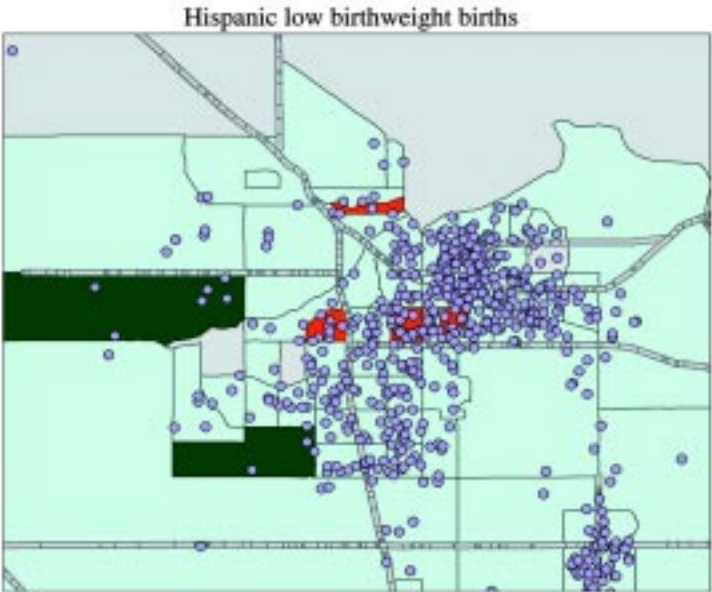
African American low birthweight births



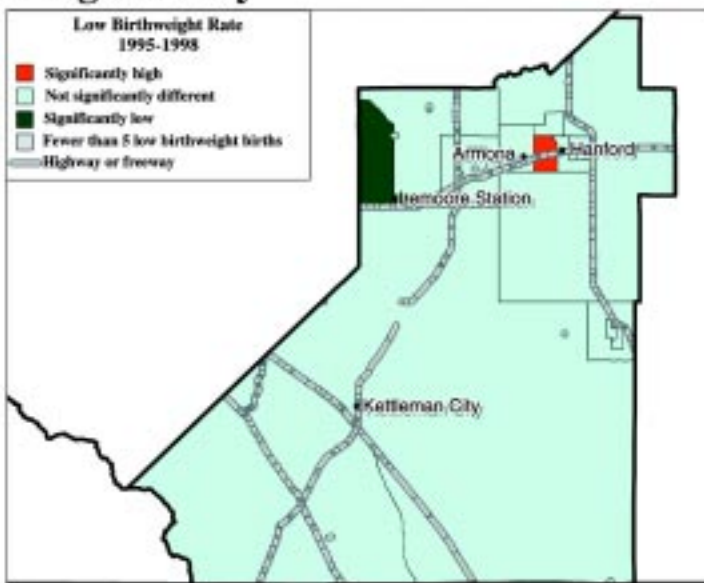
American Indian/Alaska Native low birthweight births



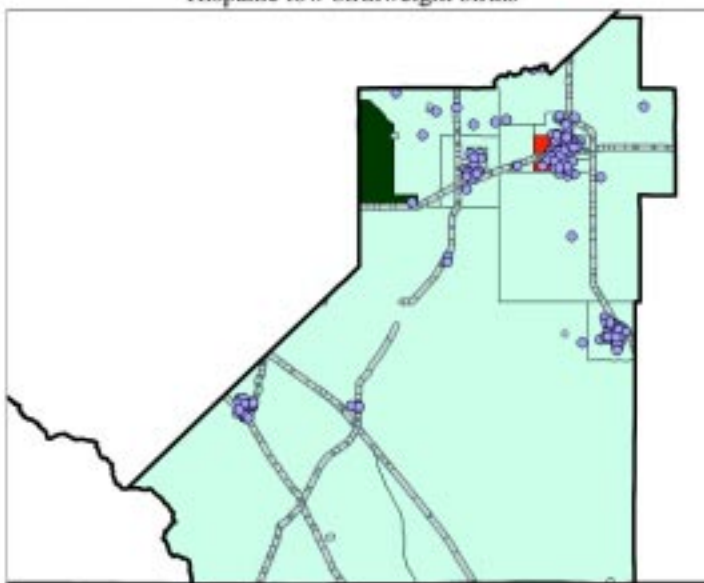
Kern County, continued



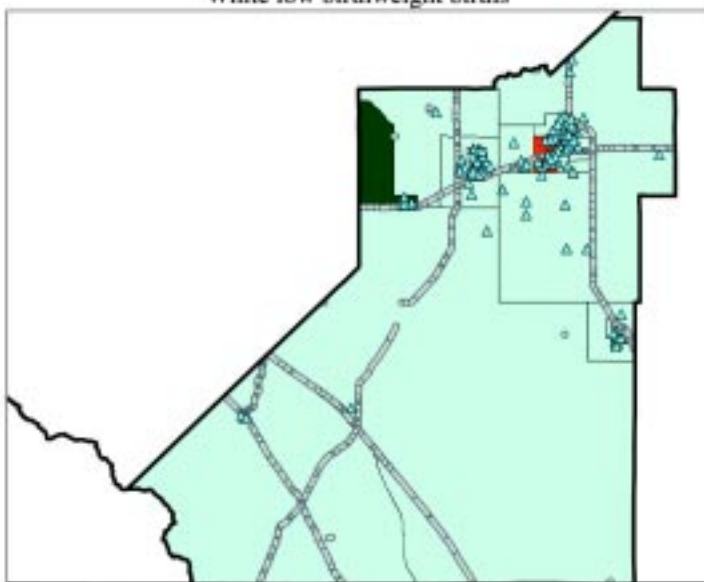
Kings County



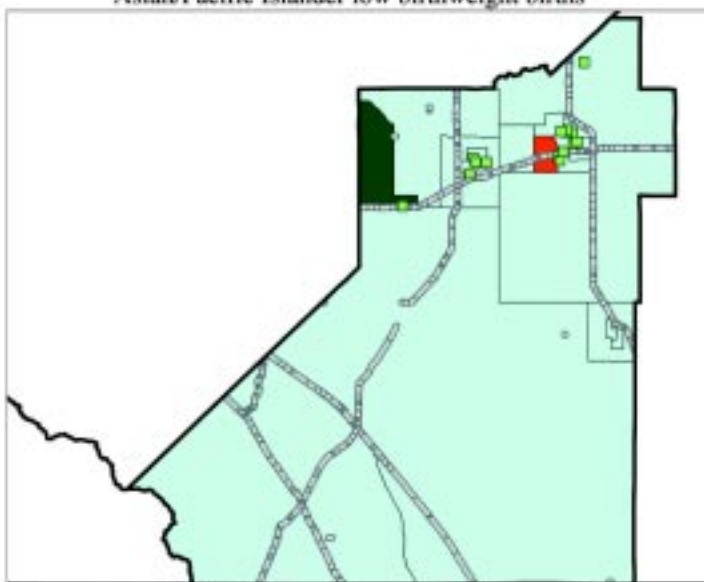
Hispanic low birthweight births



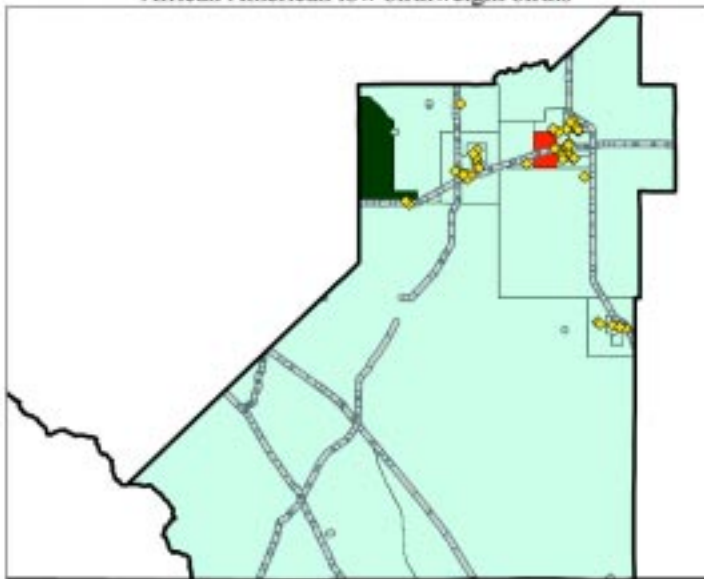
White low birthweight births



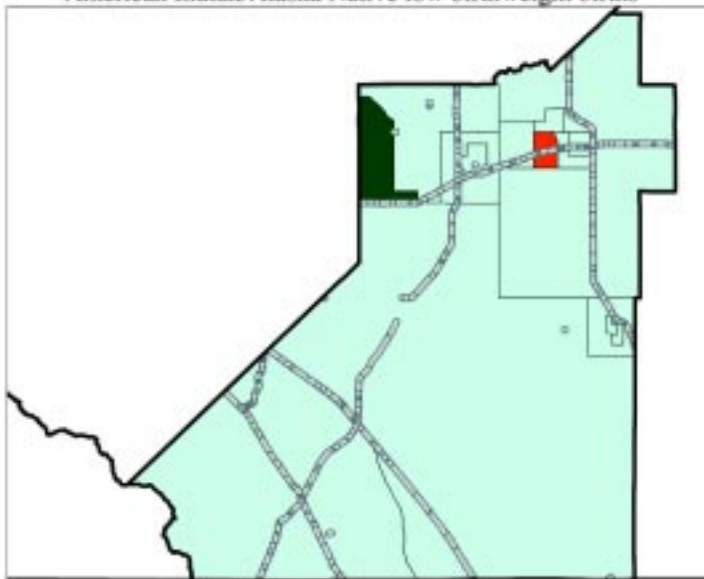
Asian/Pacific Islander low birthweight births



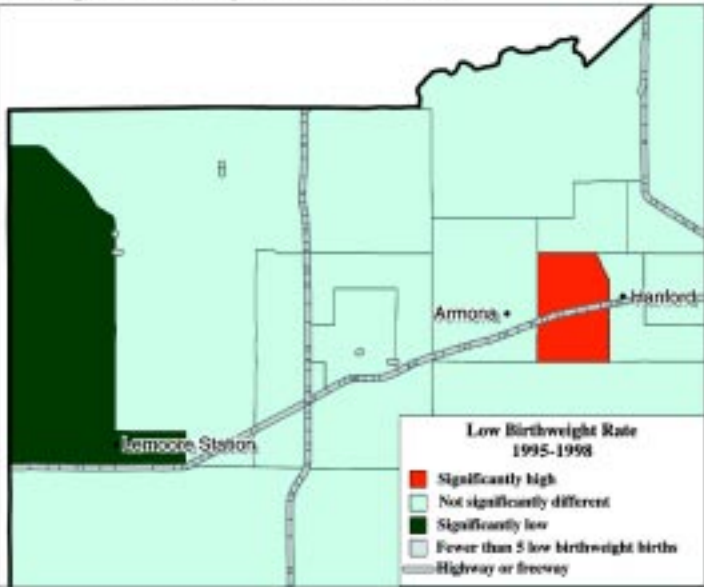
African American low birthweight births



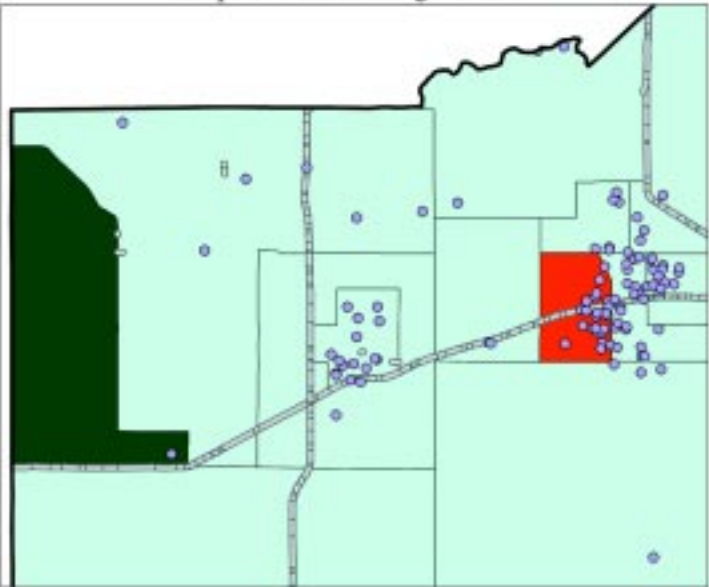
American Indian/Alaska Native low birthweight births



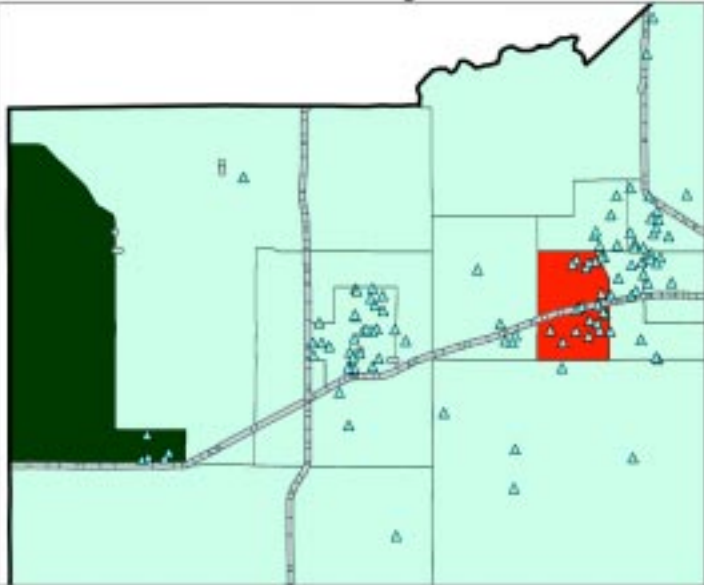
Kings County, continued



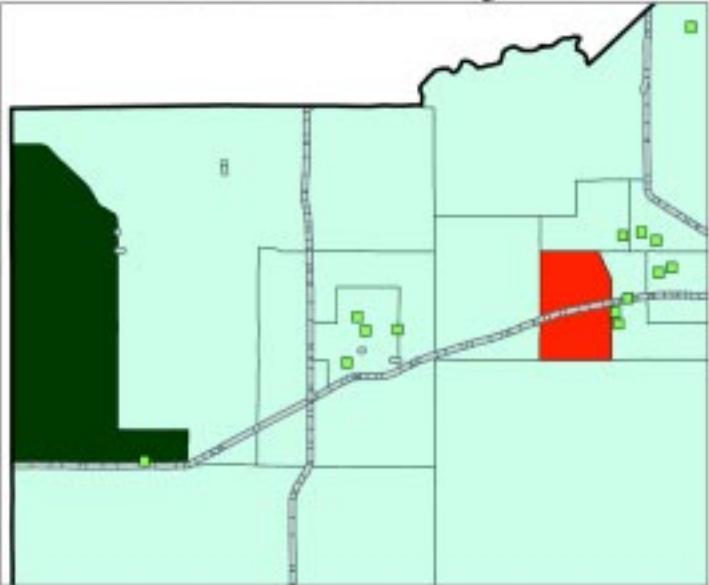
Hispanic low birthweight births



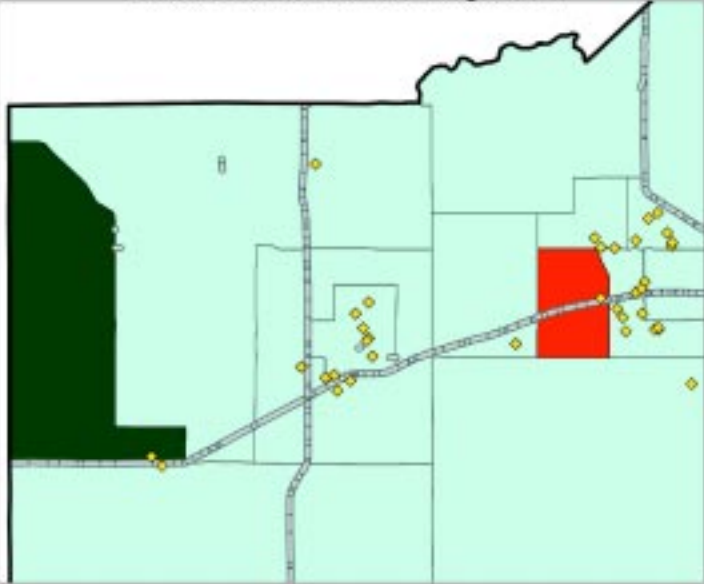
White low birthweight births



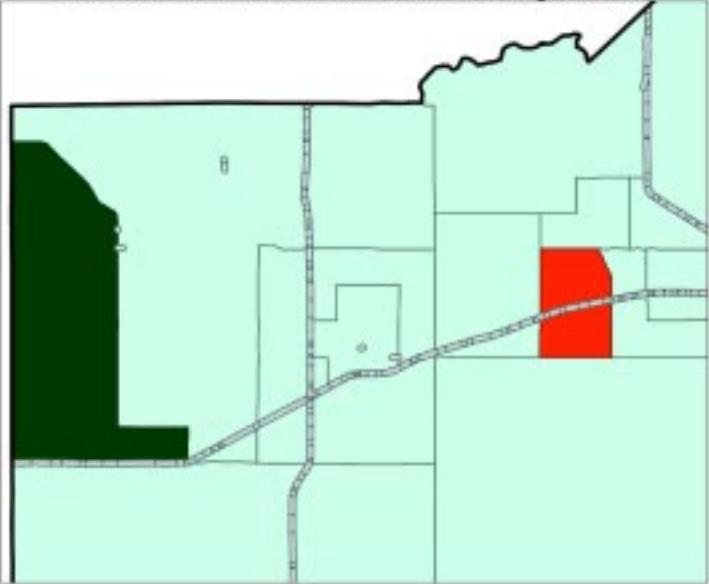
Asian/Pacific Islander low birthweight births



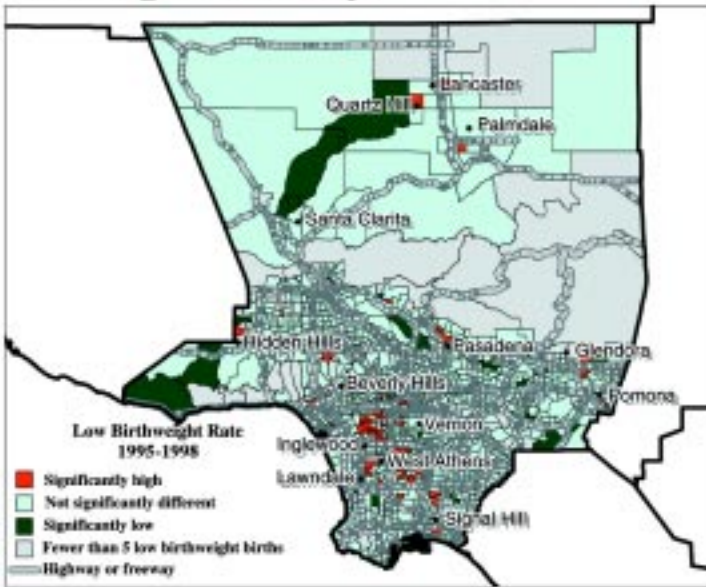
African American low birthweight births



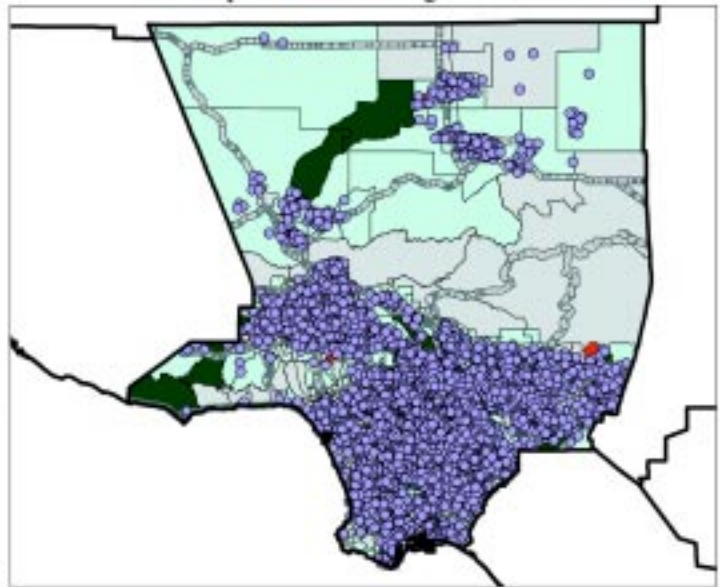
American Indian/Alaska Native low birthweight births



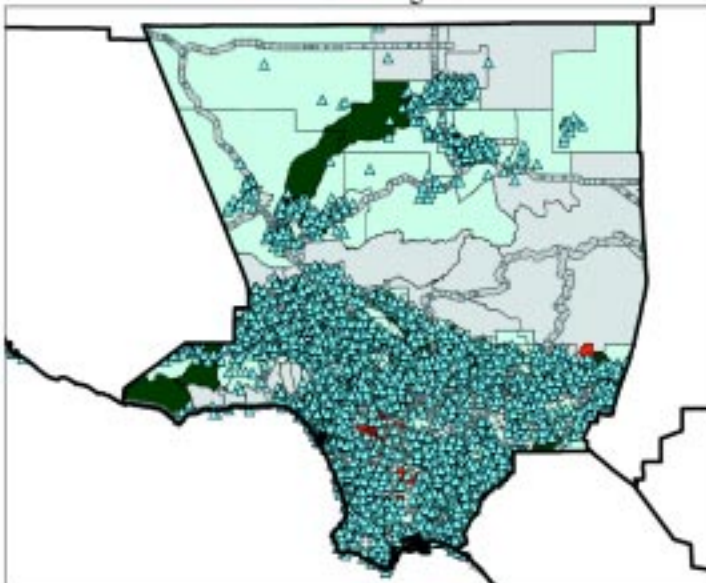
Los Angeles County



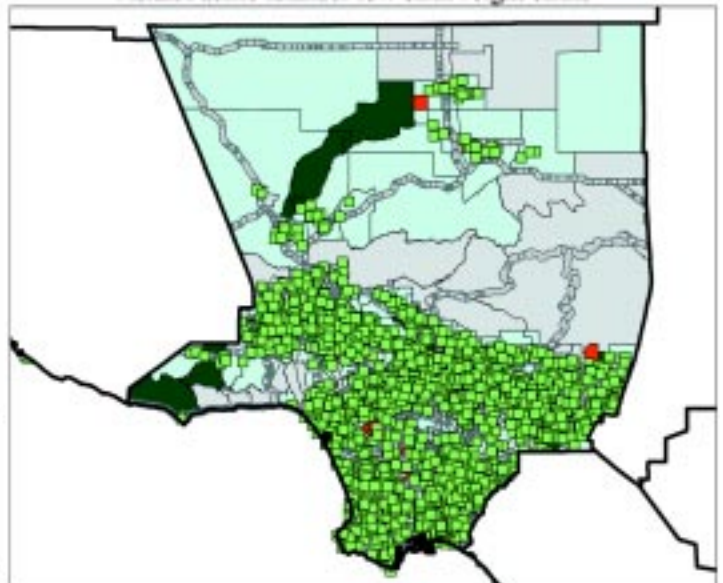
Hispanic low birthweight births



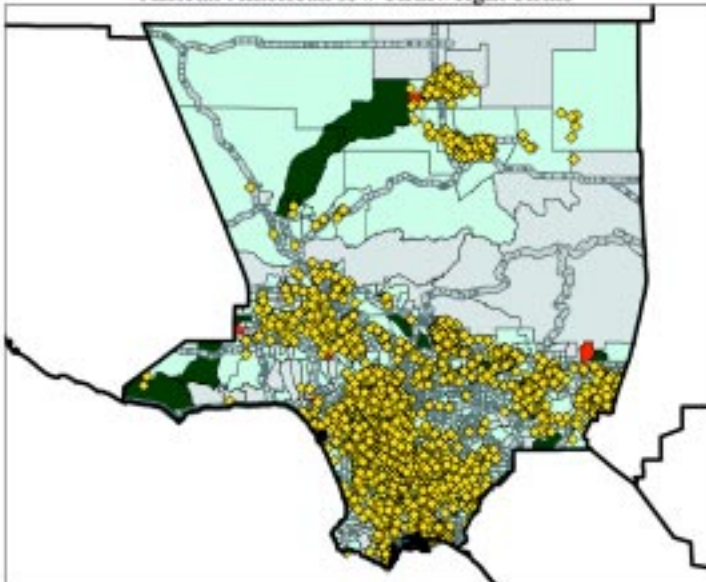
White low birthweight births



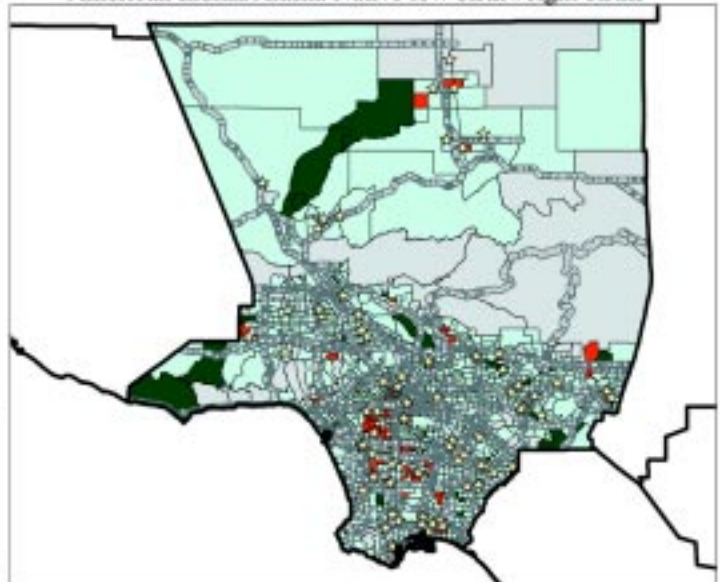
Asian/Pacific Islander low birthweight births



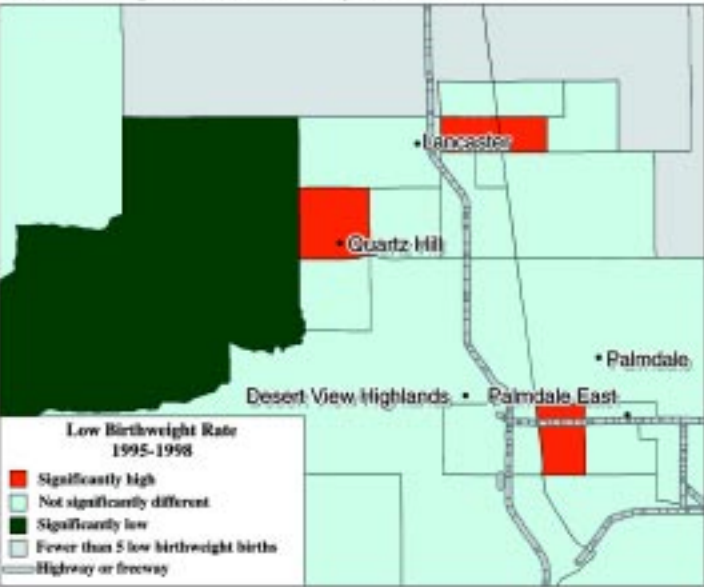
African American low birthweight births



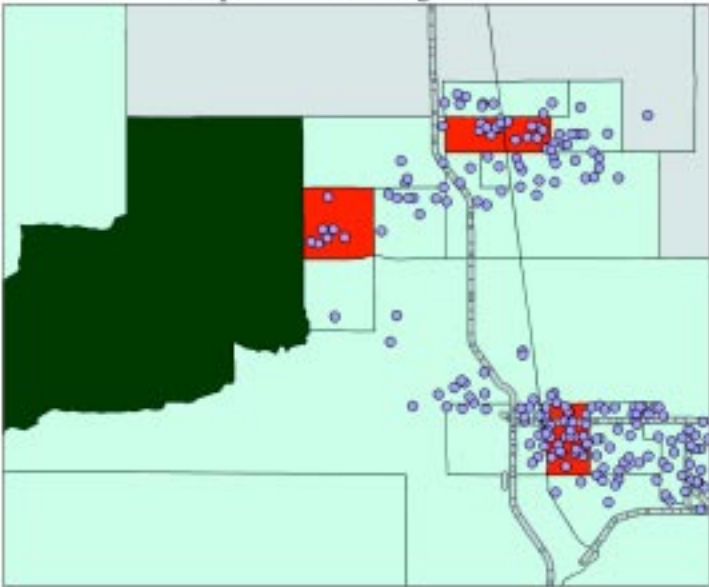
American Indian/Alaska Native low birthweight births



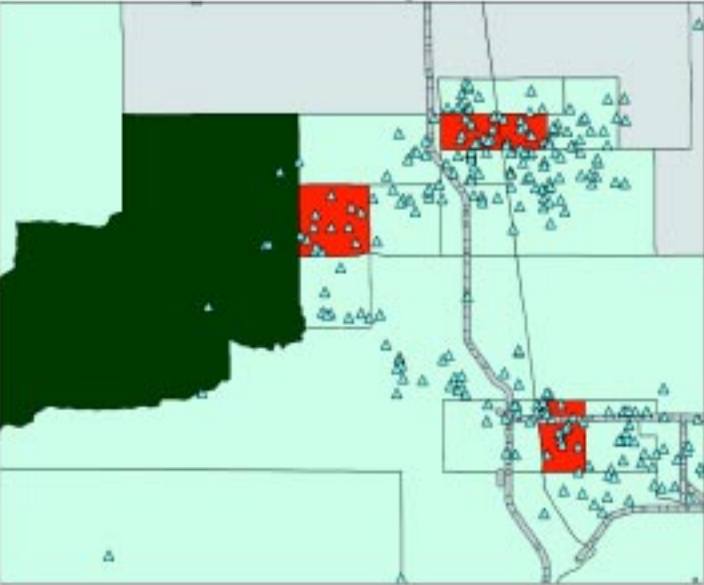
Los Angeles County, continued



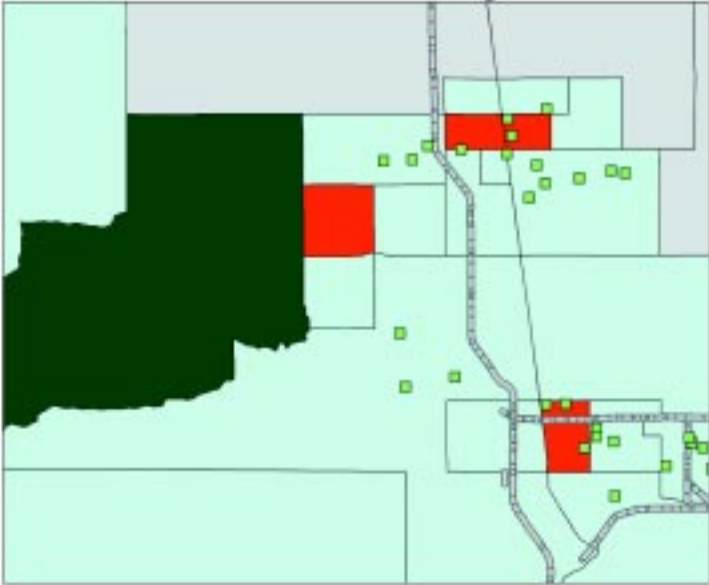
Hispanic low birthweight births



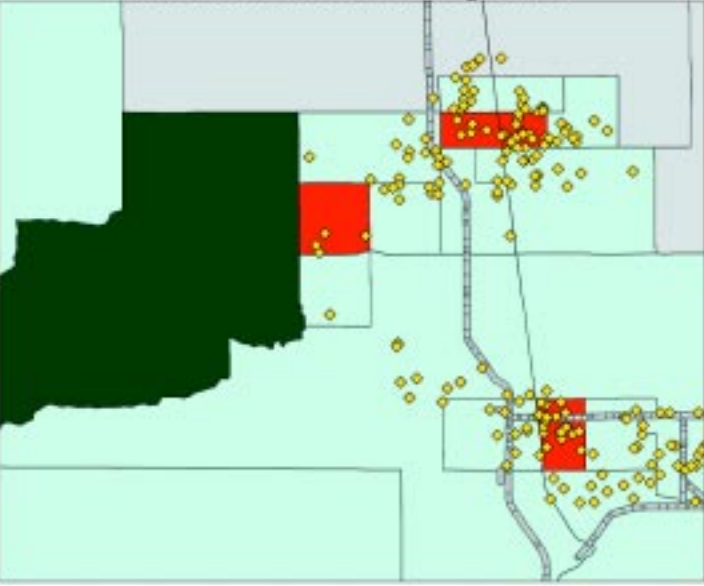
White low birthweight births



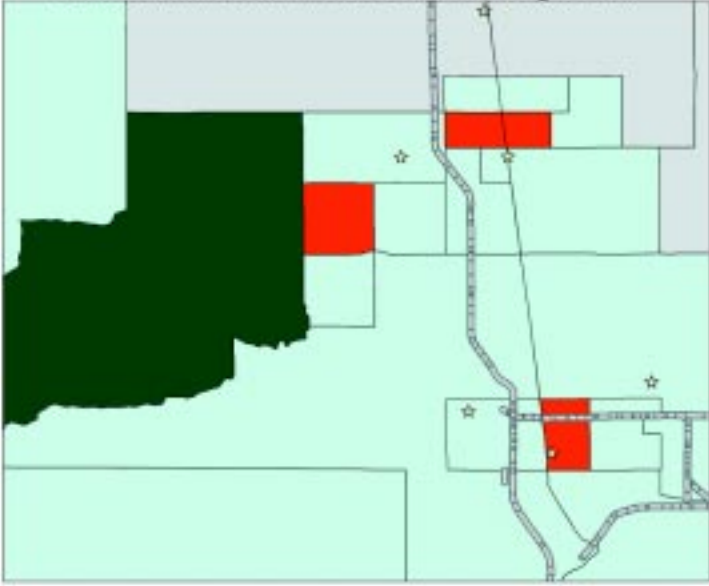
Asian/Pacific Islander low birthweight births



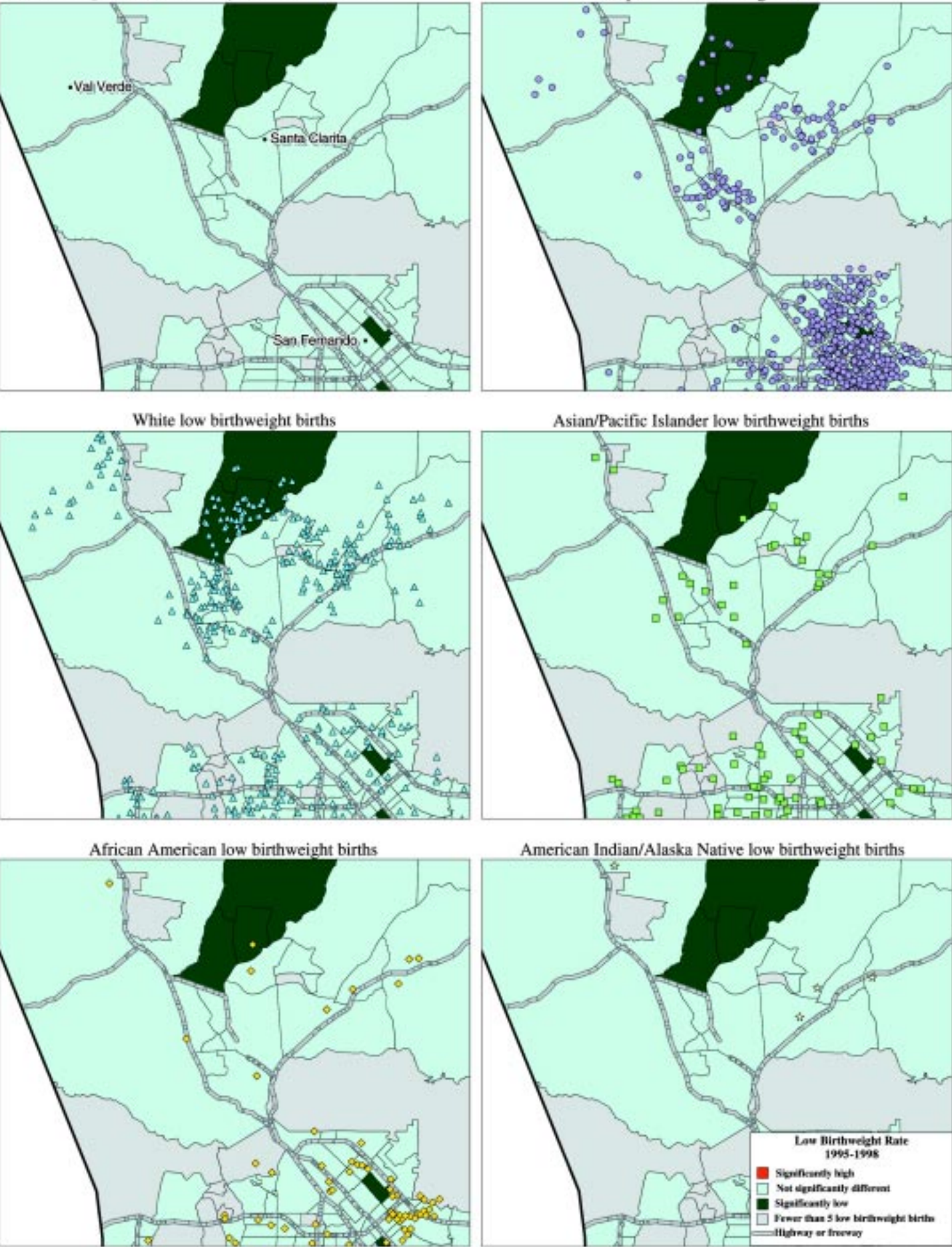
African American low birthweight births



American Indian/Alaska Native low birthweight births



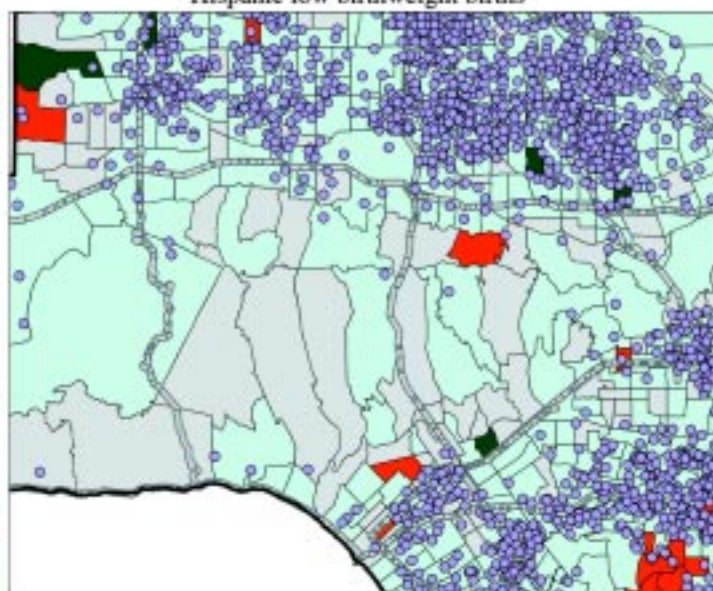
Los Angeles County, continued



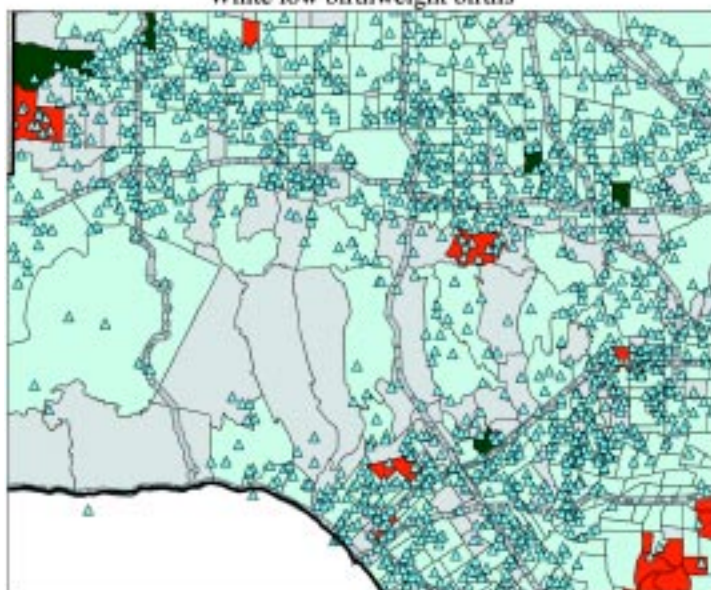
Los Angeles County, continued



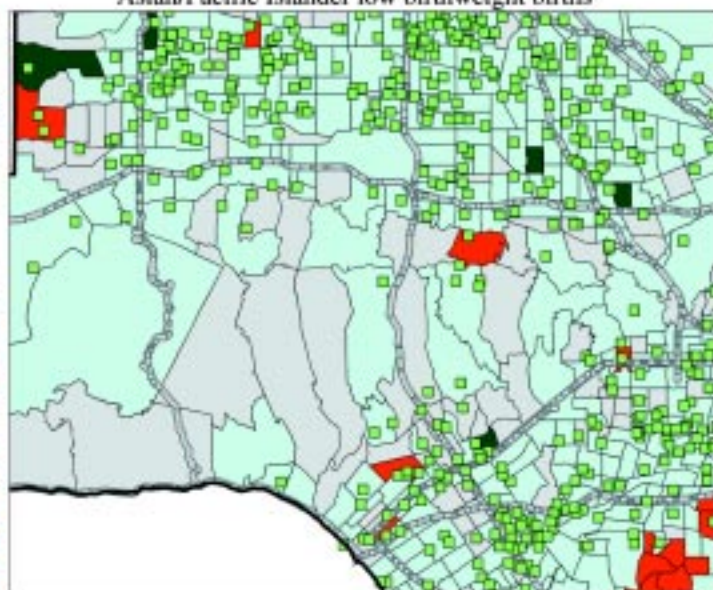
Hispanic low birthweight births



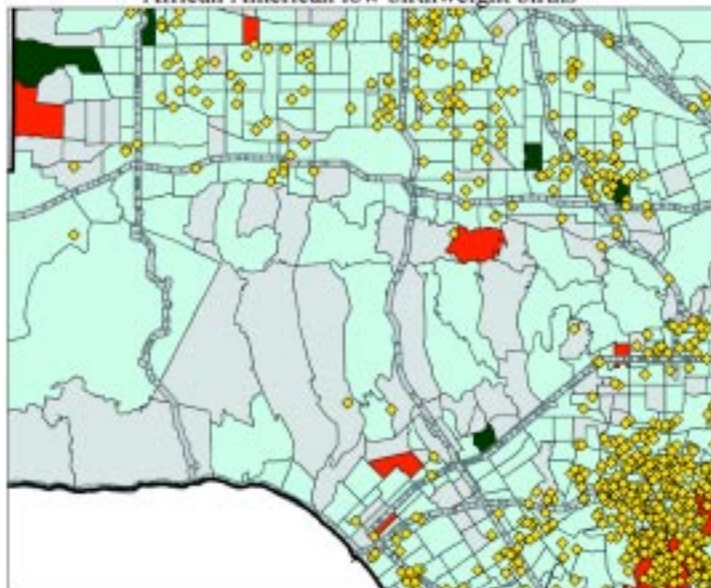
White low birthweight births



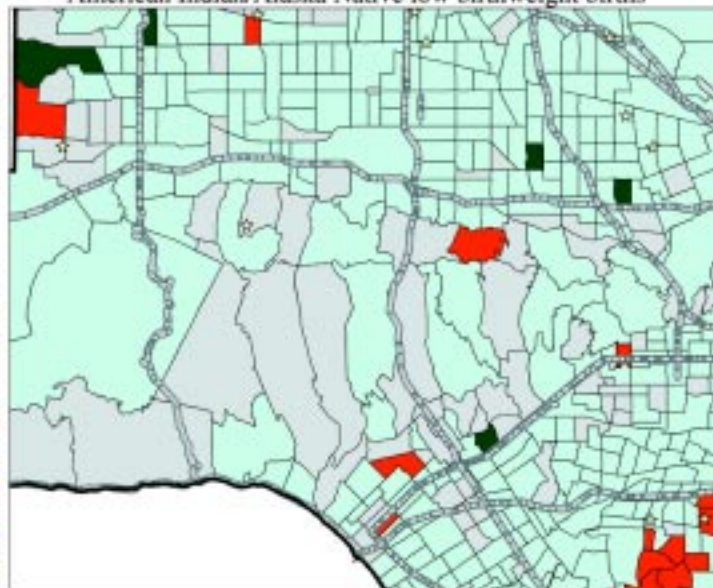
Asian/Pacific Islander low birthweight births



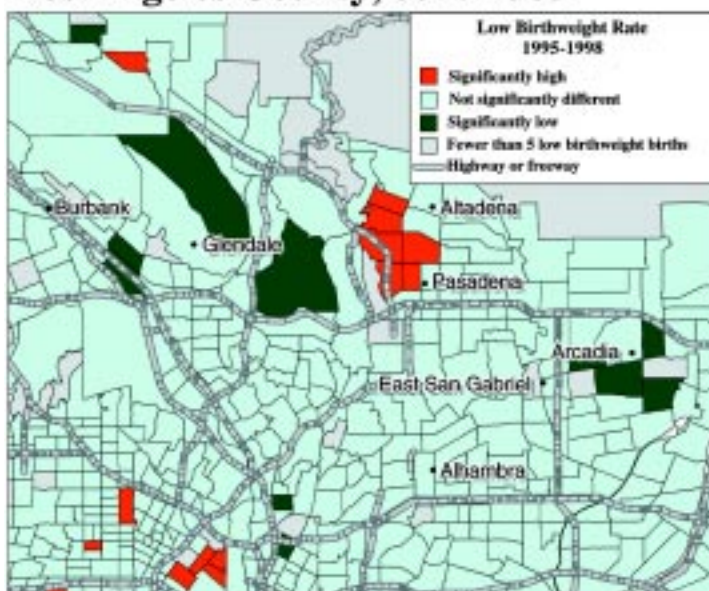
African American low birthweight births



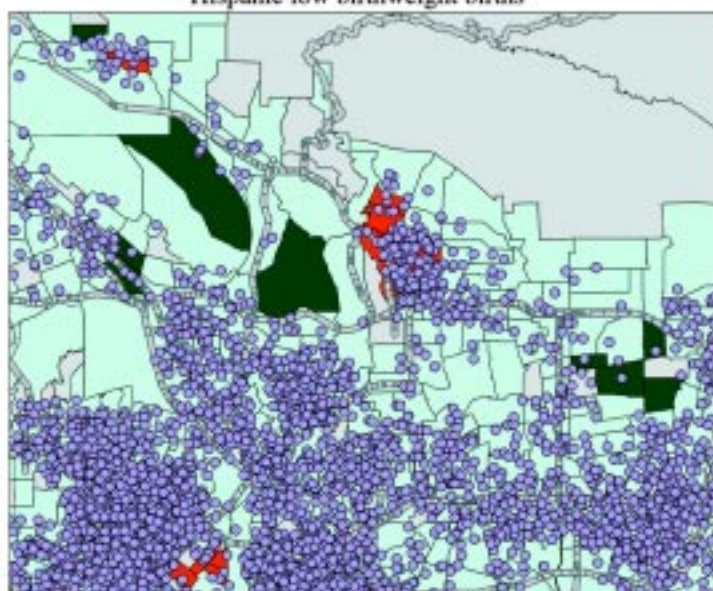
American Indian/Alaska Native low birthweight births



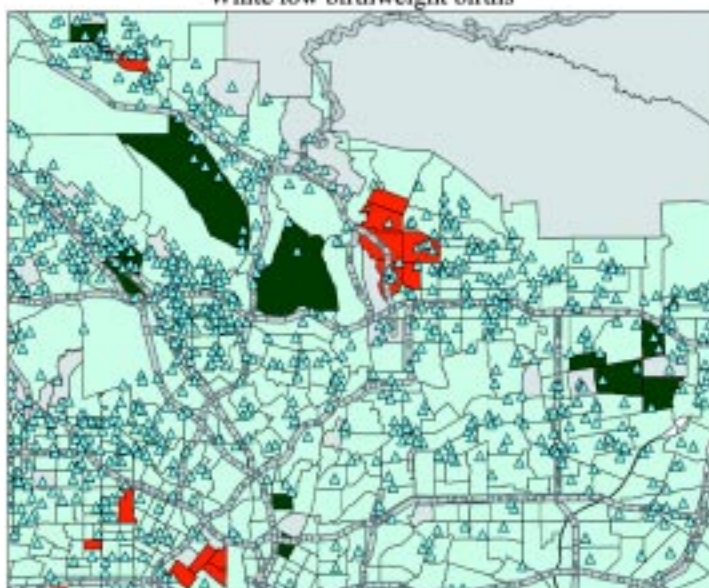
Los Angeles County, continued



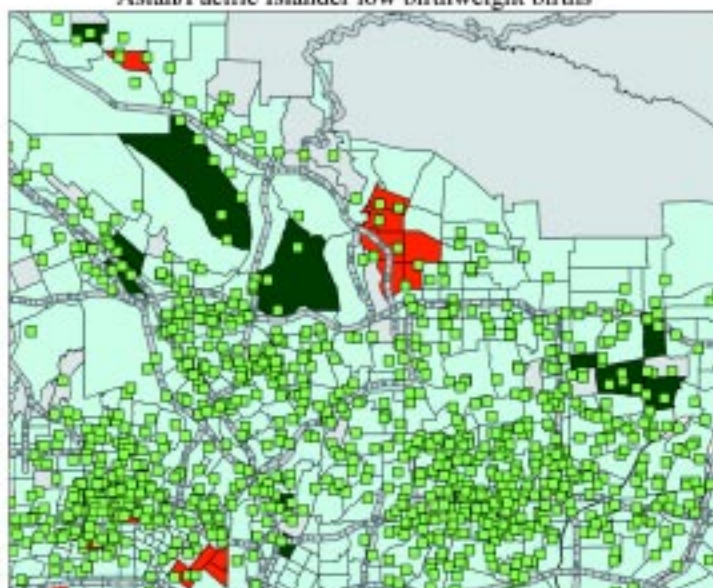
Hispanic low birthweight births



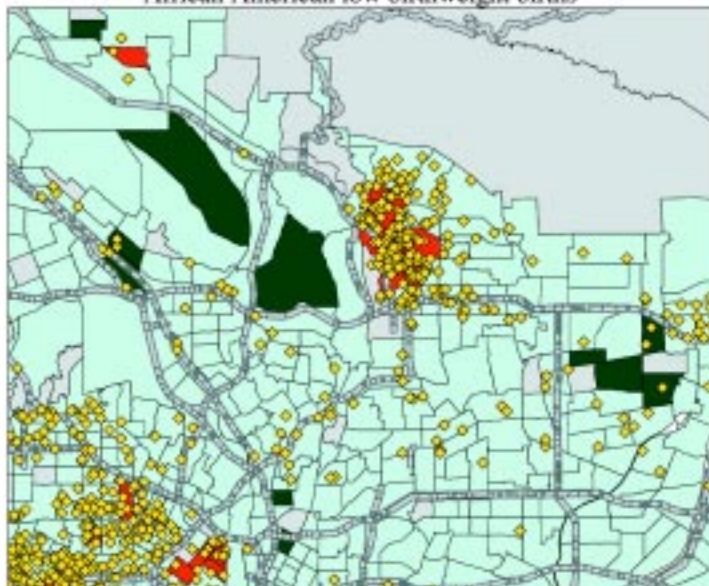
White low birthweight births



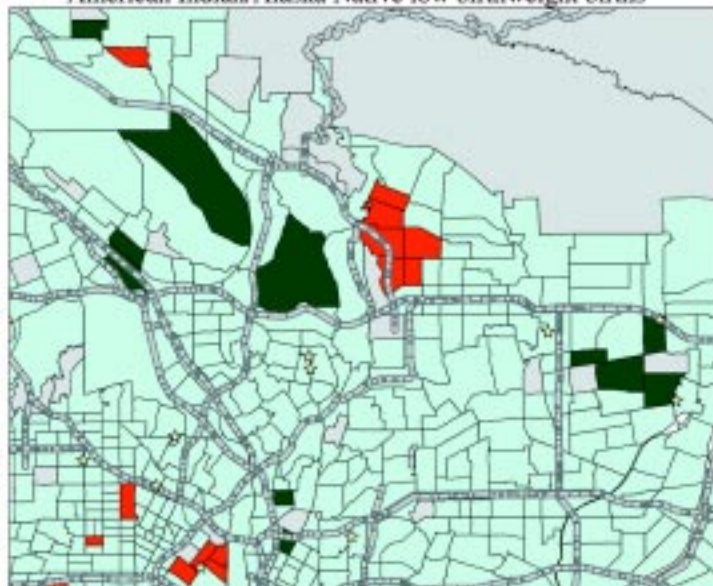
Asian/Pacific Islander low birthweight births



African American low birthweight births



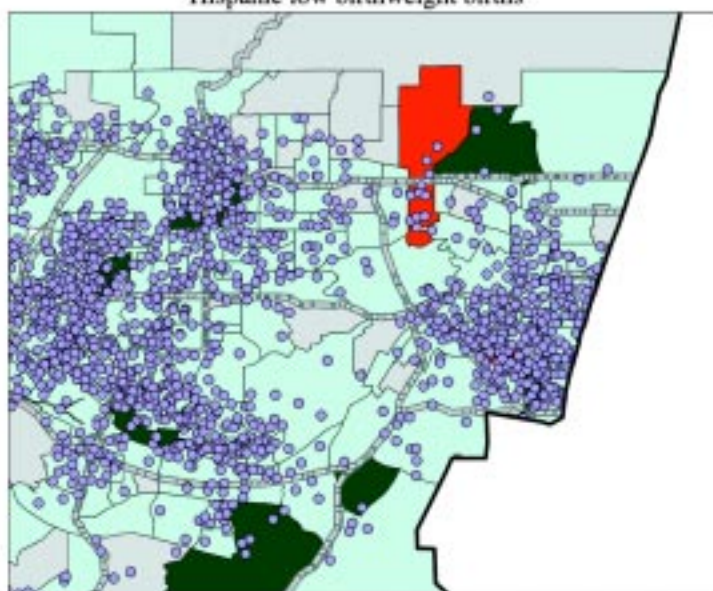
American Indian/Alaska Native low birthweight births



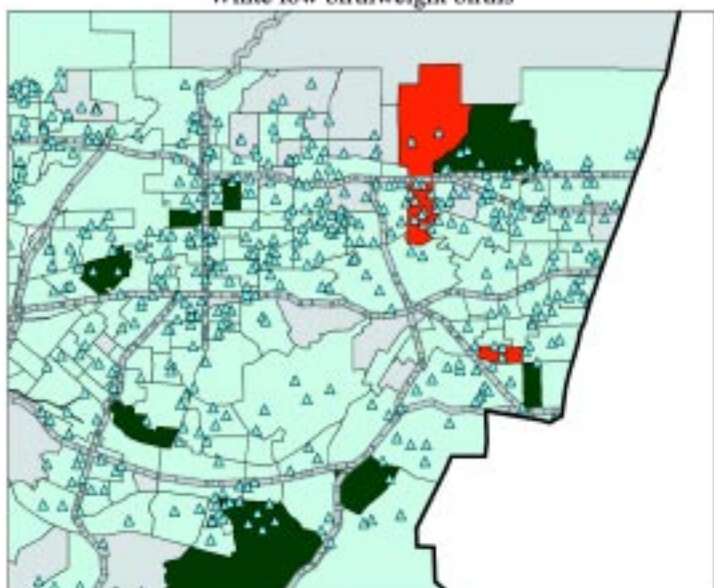
Los Angeles County, continued



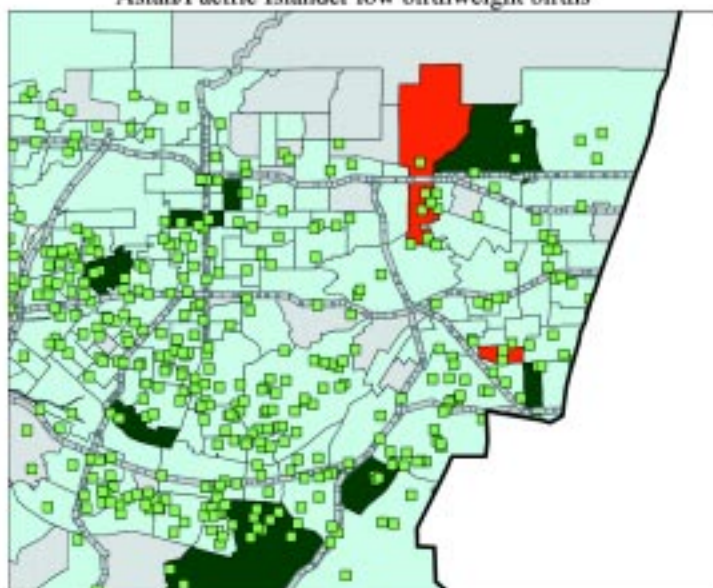
Hispanic low birthweight births



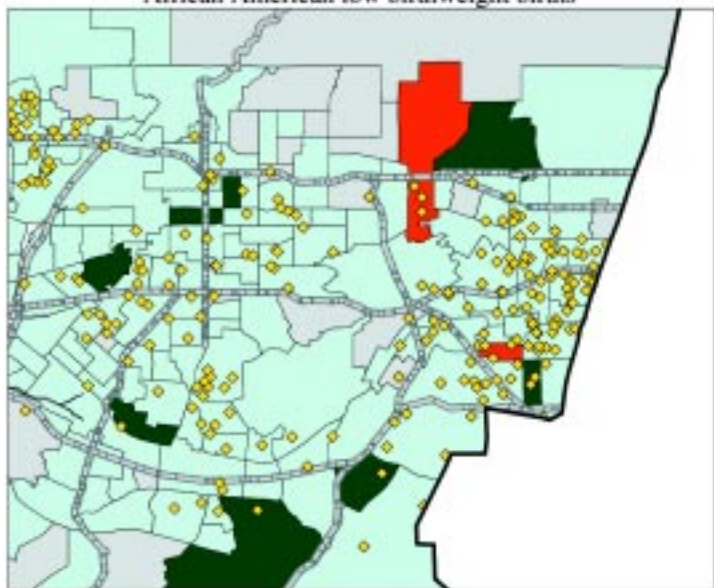
White low birthweight births



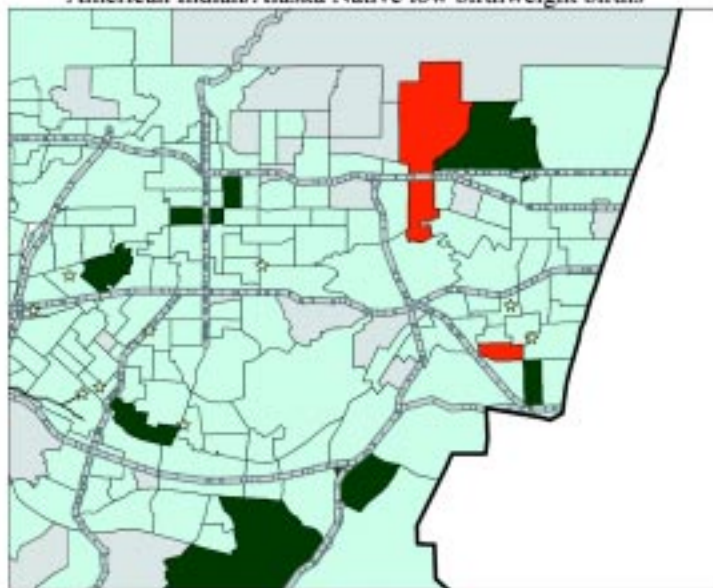
Asian/Pacific Islander low birthweight births



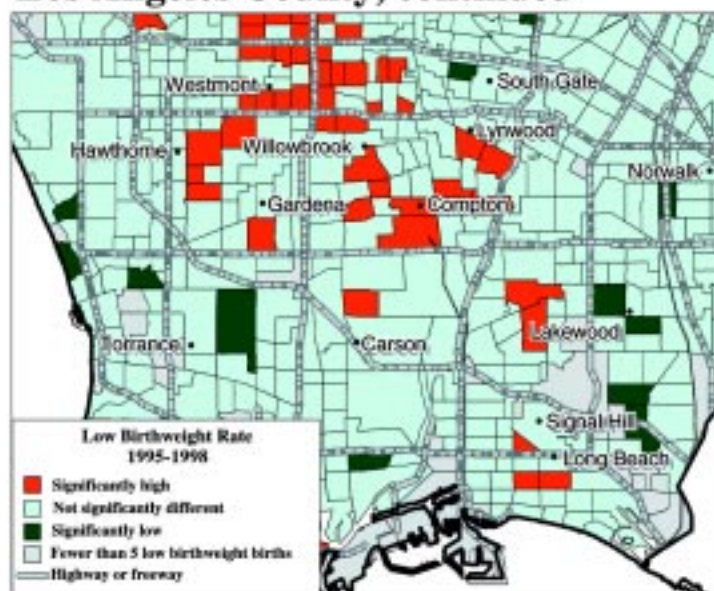
African American low birthweight births



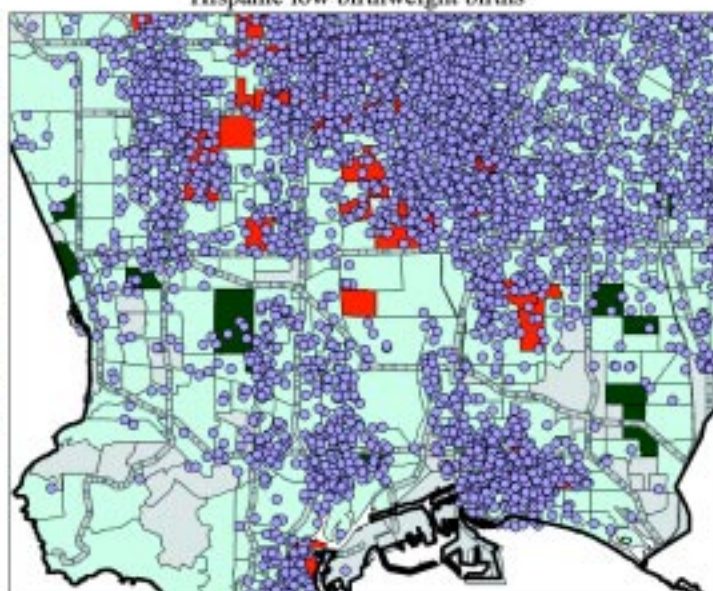
American Indian/Alaska Native low birthweight births



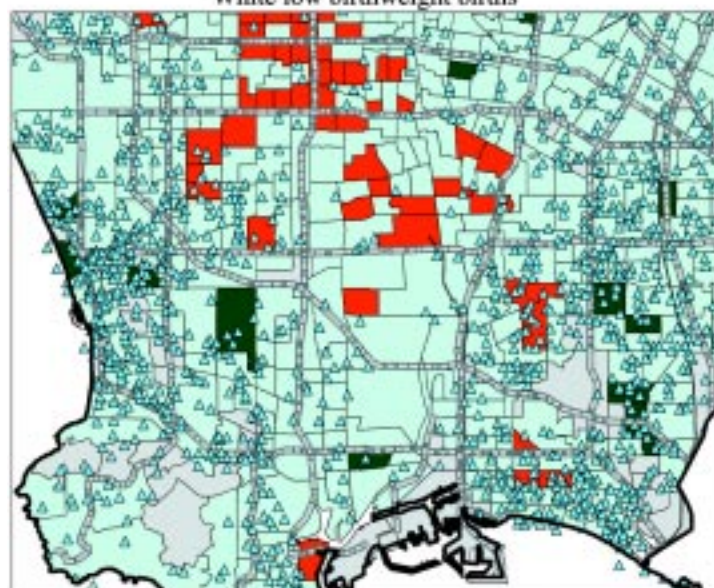
Los Angeles County, continued



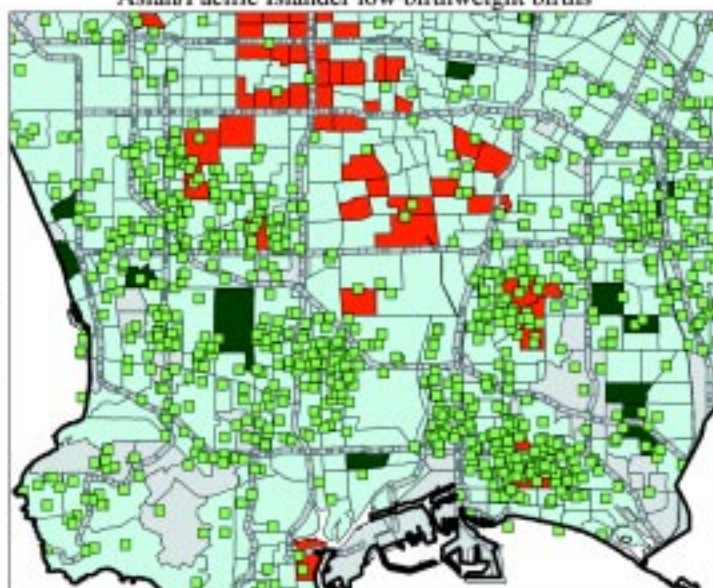
Hispanic low birthweight births



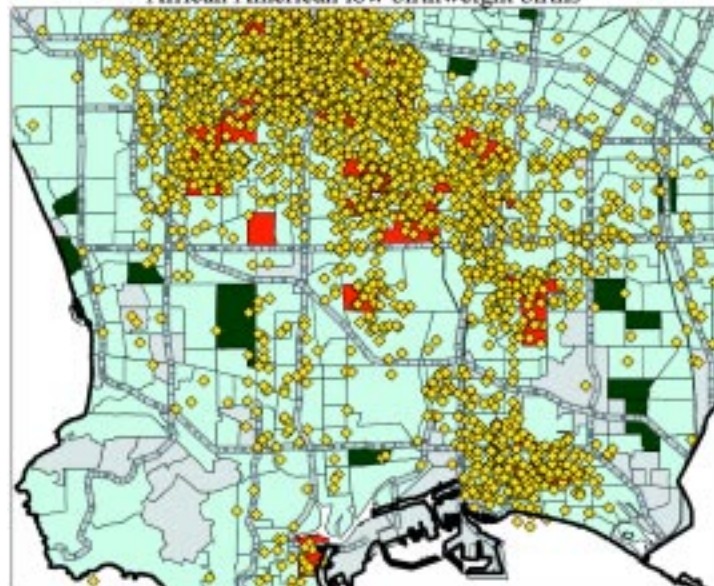
White low birthweight births



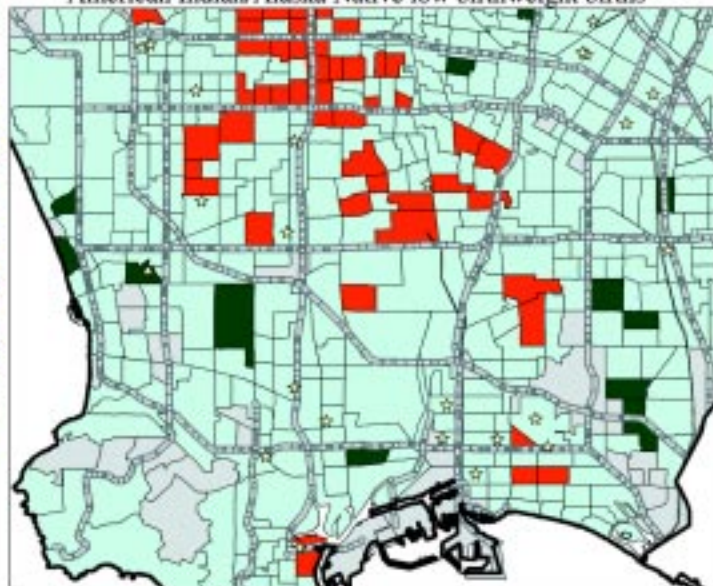
Asian/Pacific Islander low birthweight births



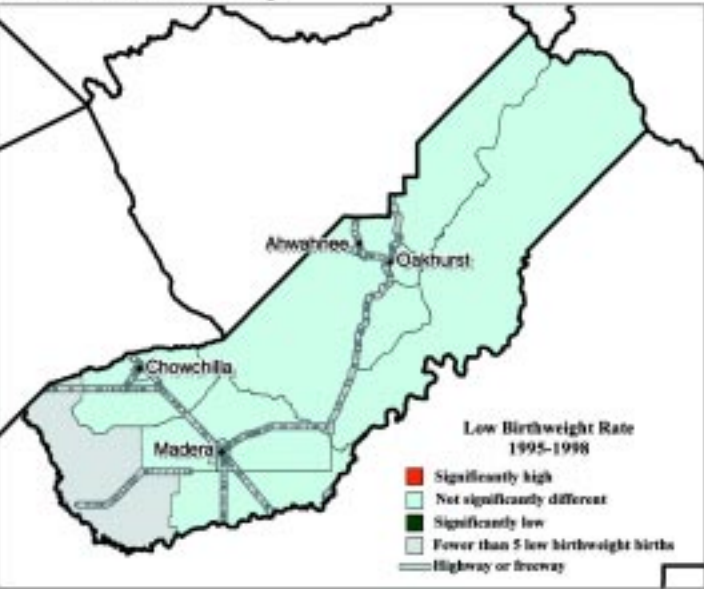
African American low birthweight births



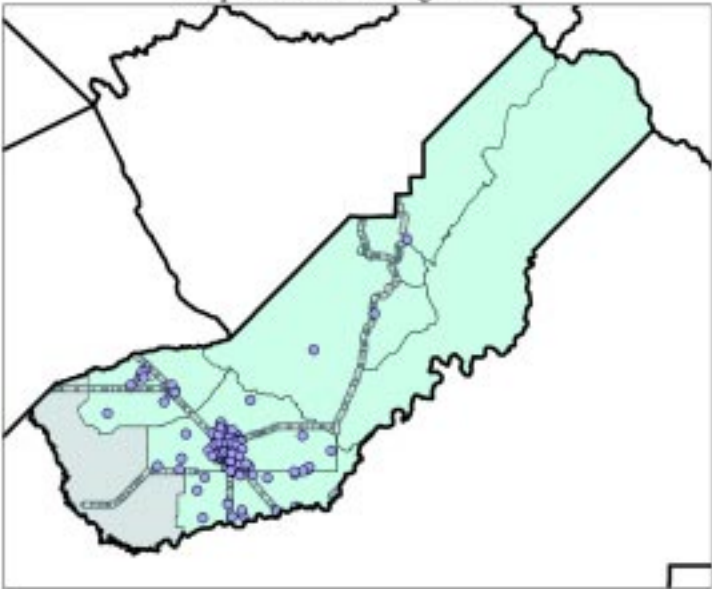
American Indian/Alaska Native low birthweight births



Madera County



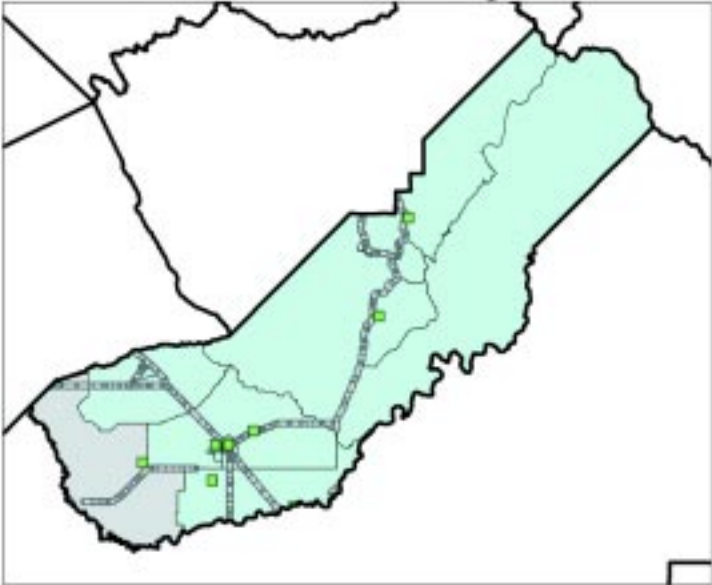
Hispanic low birthweight births



White low birthweight births



Asian/Pacific Islander low birthweight births



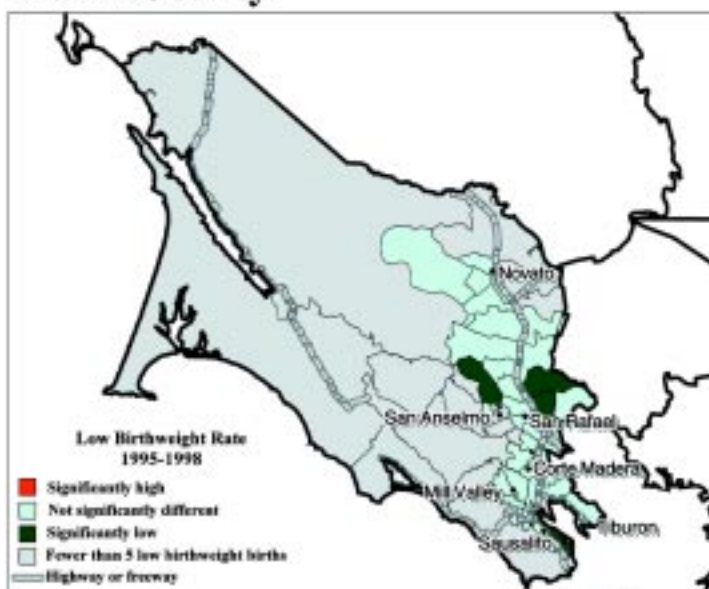
African American low birthweight births



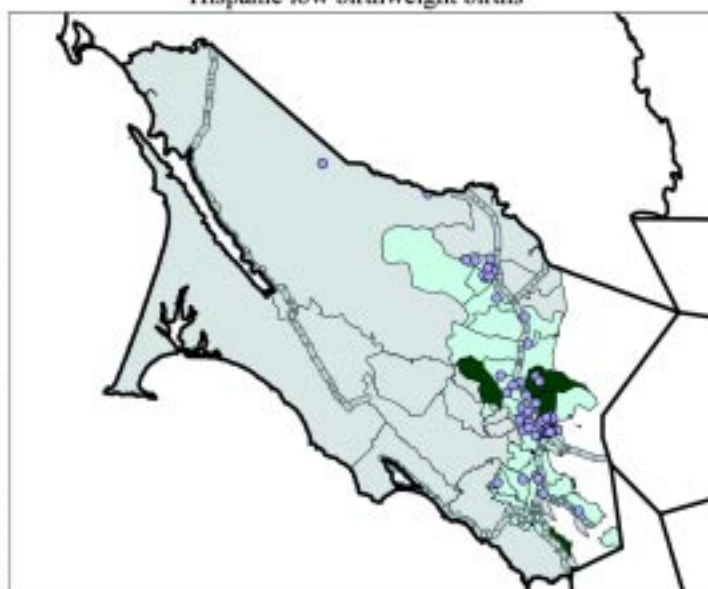
American Indian/Alaska Native low birthweight births



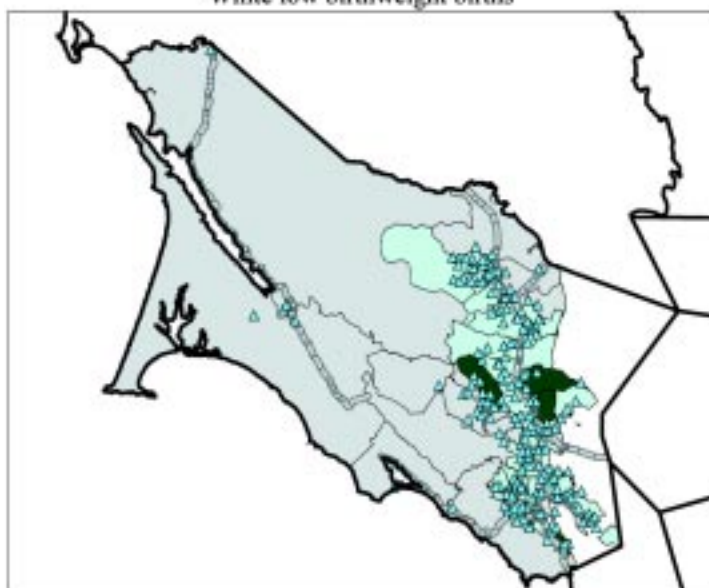
Marin County



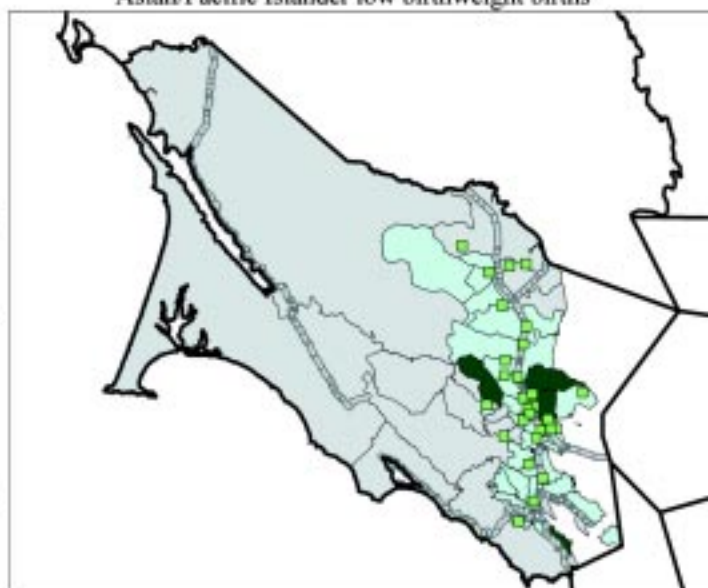
Hispanic low birthweight births



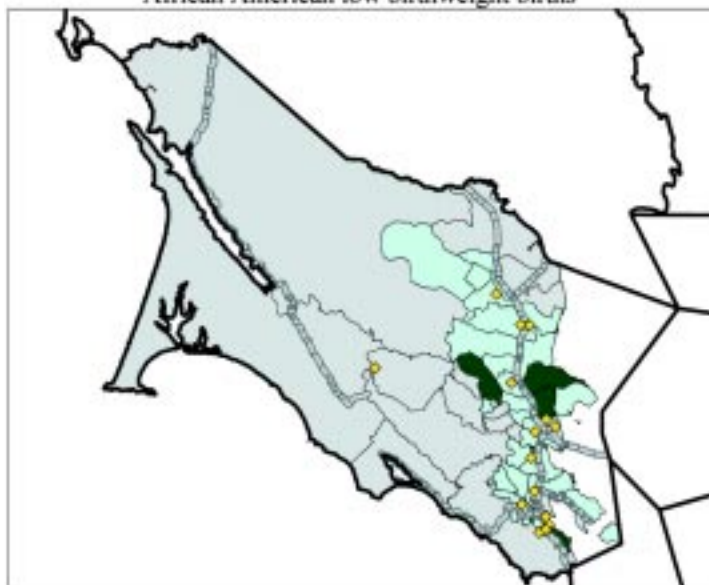
White low birthweight births



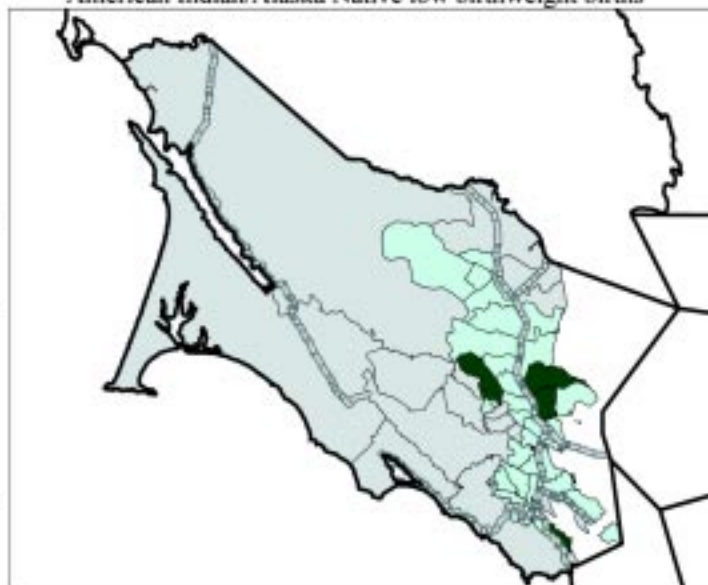
Asian/Pacific Islander low birthweight births



African American low birthweight births



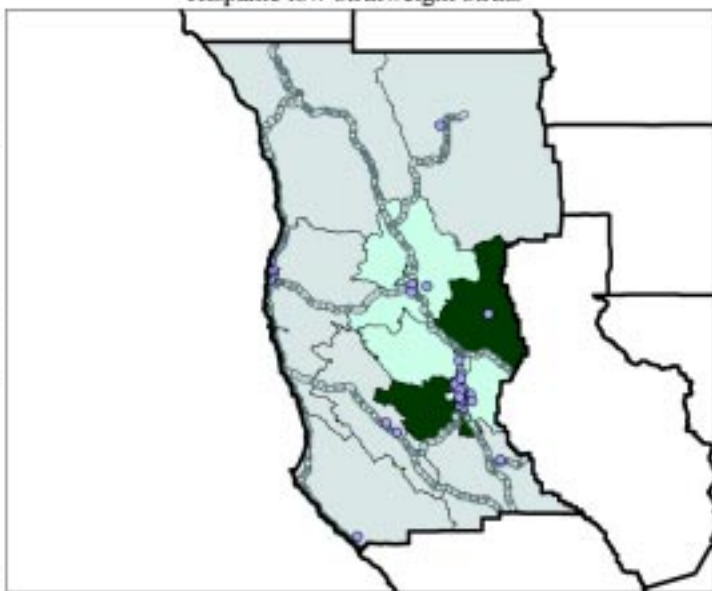
American Indian/Alaska Native low birthweight births



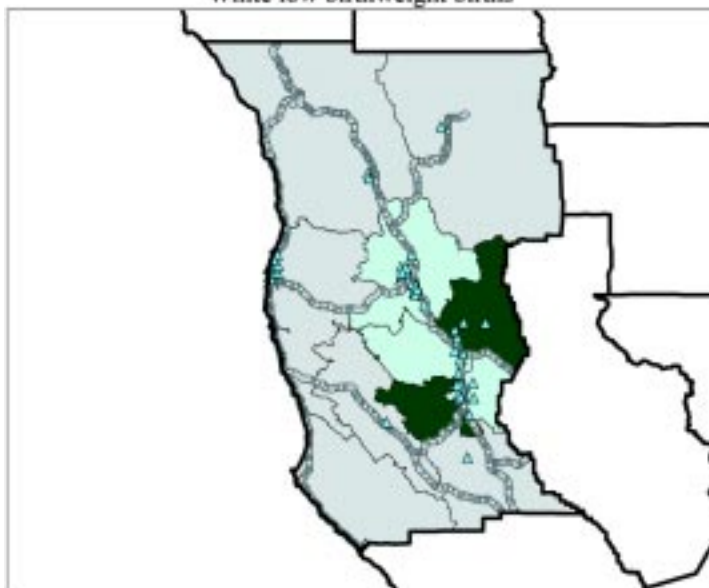
Mendocino County



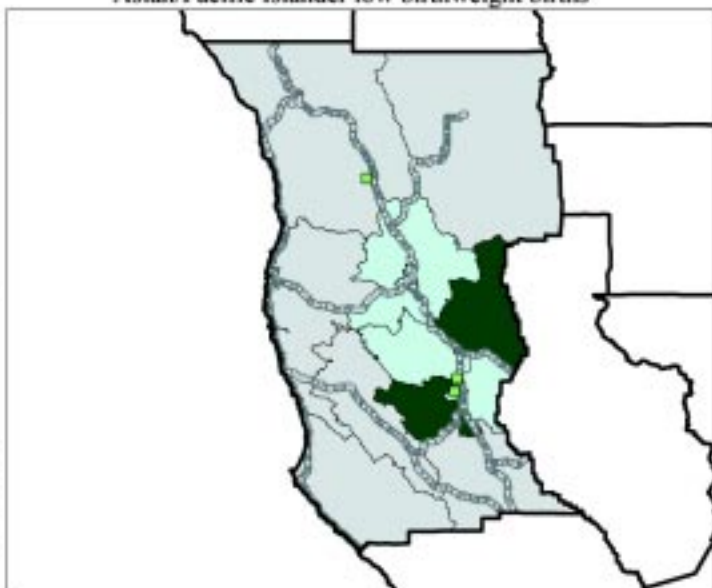
Hispanic low birthweight births



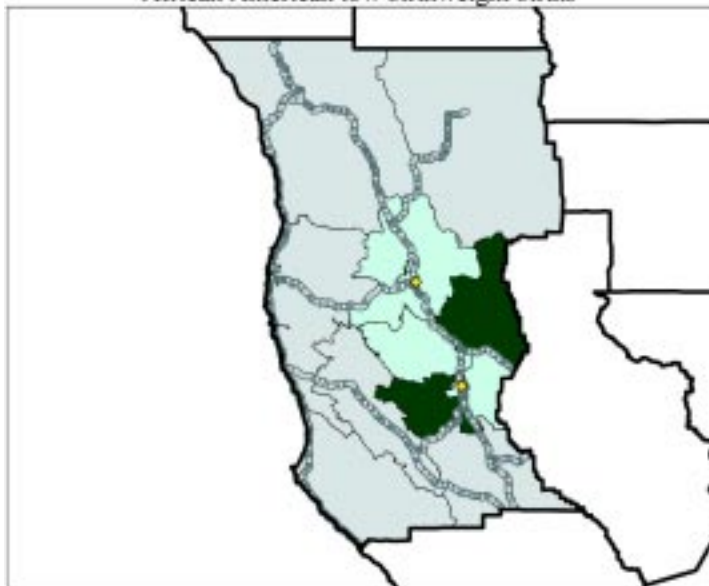
White low birthweight births



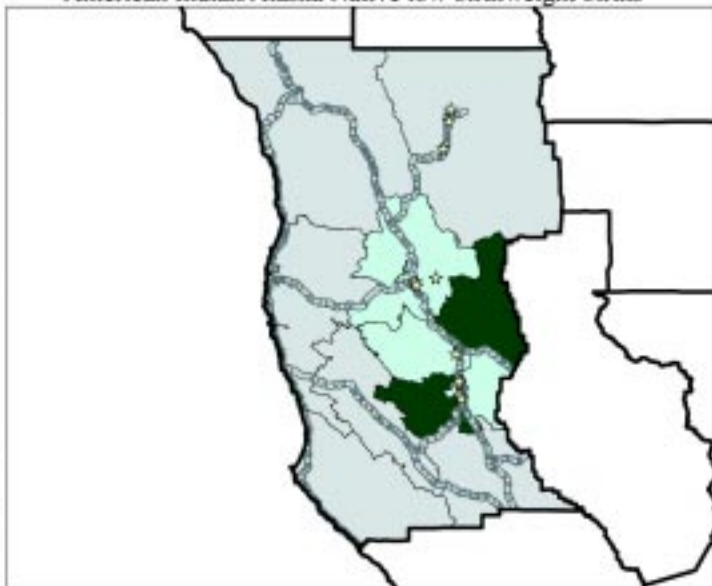
Asian/Pacific Islander low birthweight births



African American low birthweight births



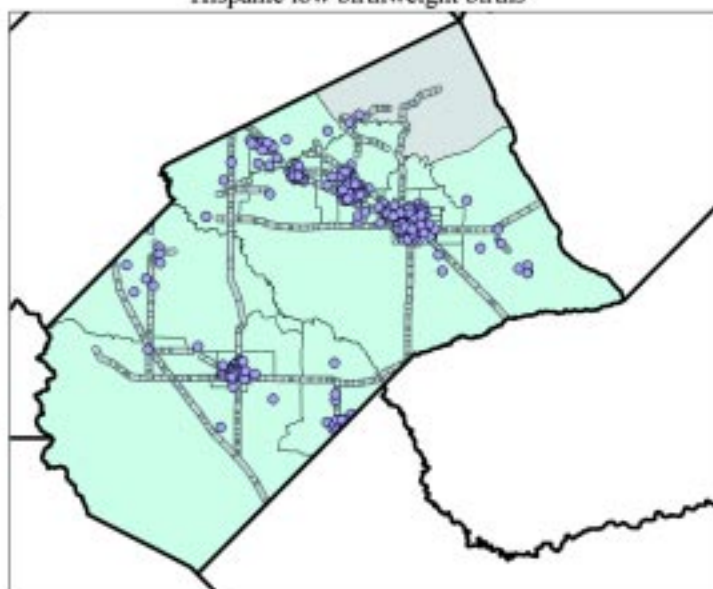
American Indian/Alaska Native low birthweight births



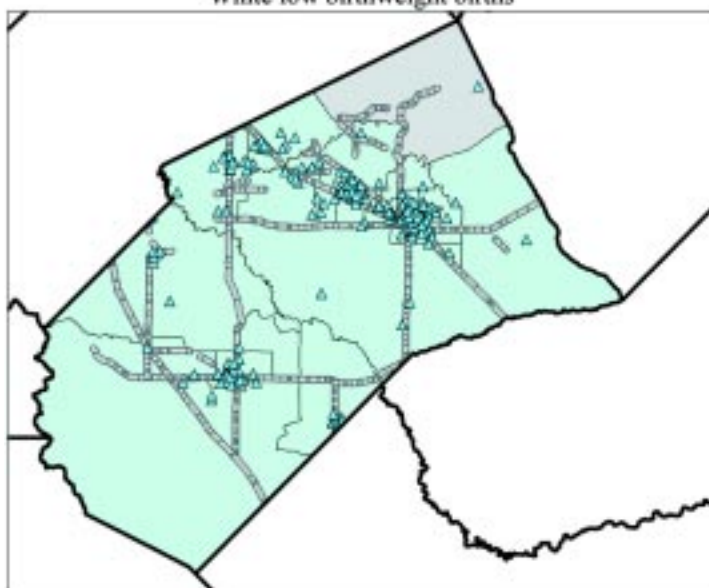
Merced County



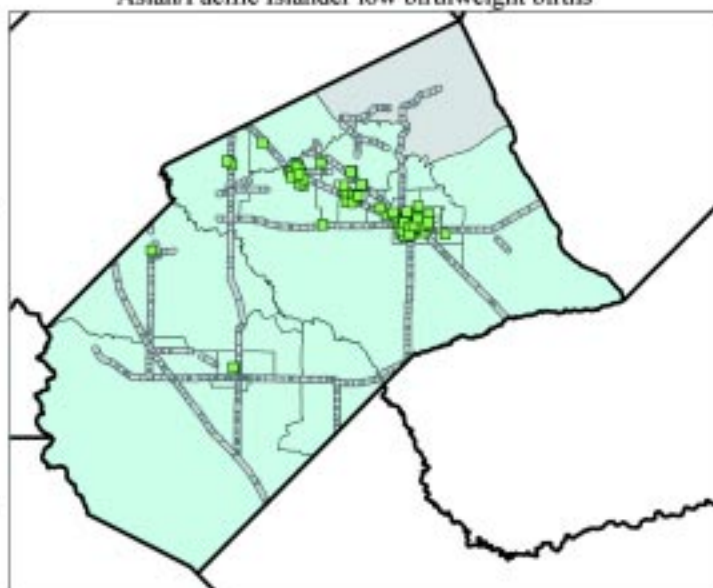
Hispanic low birthweight births



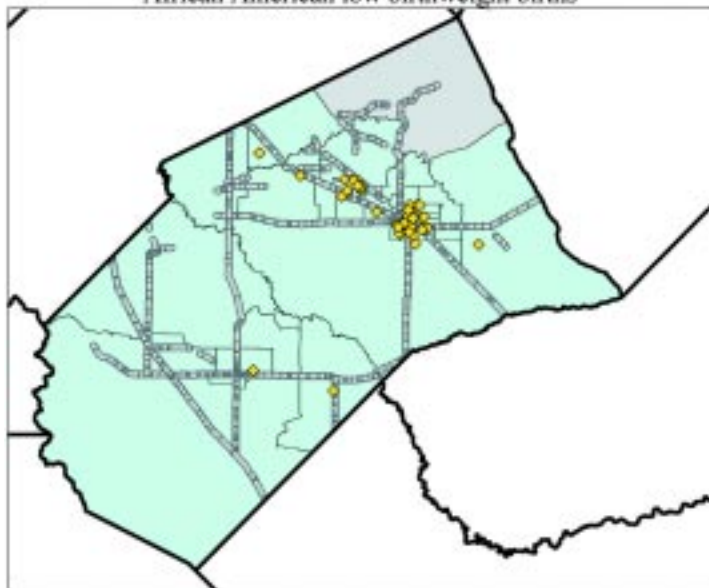
White low birthweight births



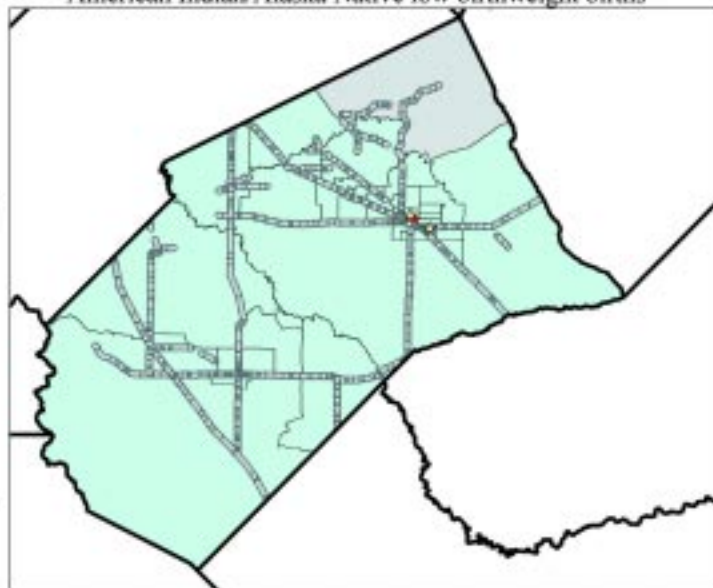
Asian/Pacific Islander low birthweight births



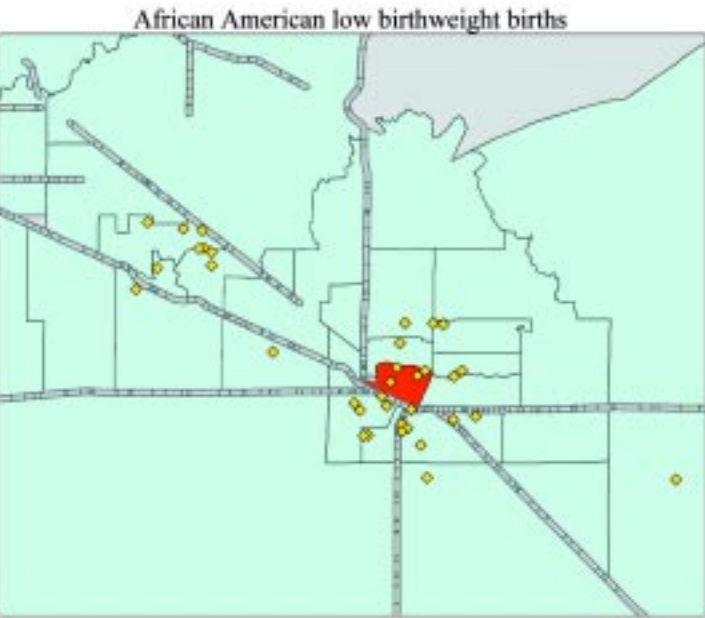
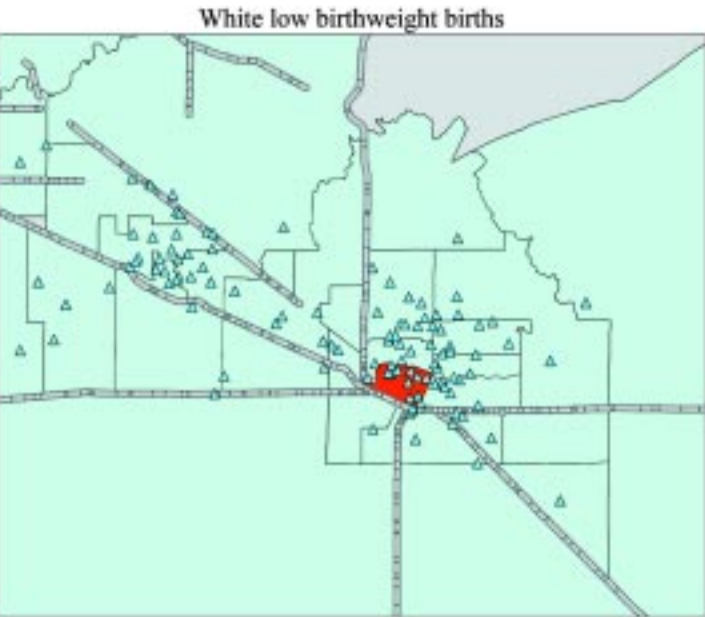
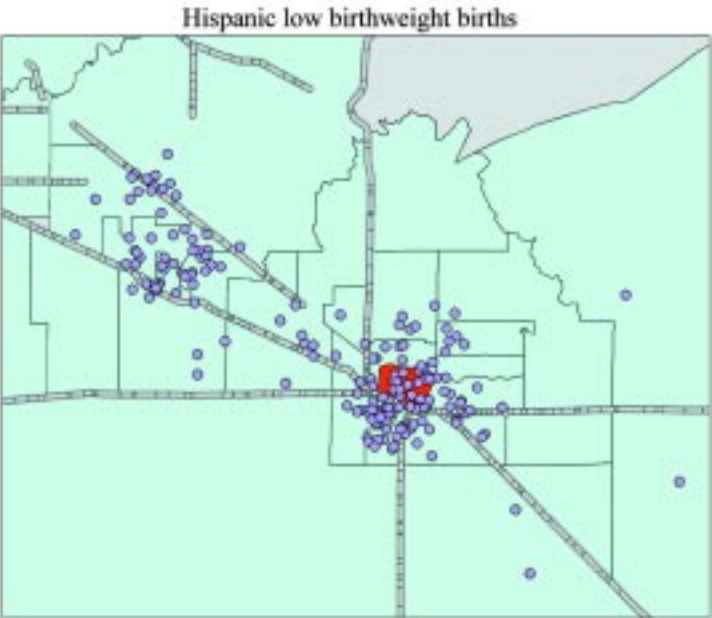
African American low birthweight births



American Indian/Alaska Native low birthweight births



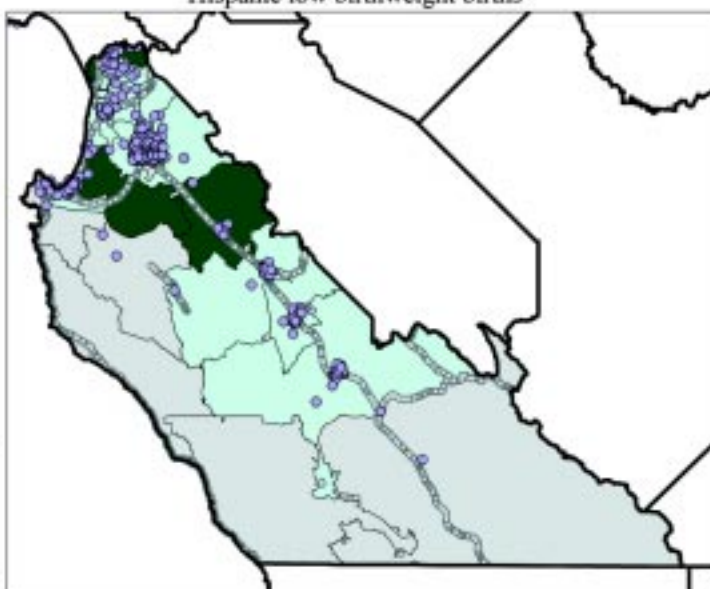
Merced County, continued



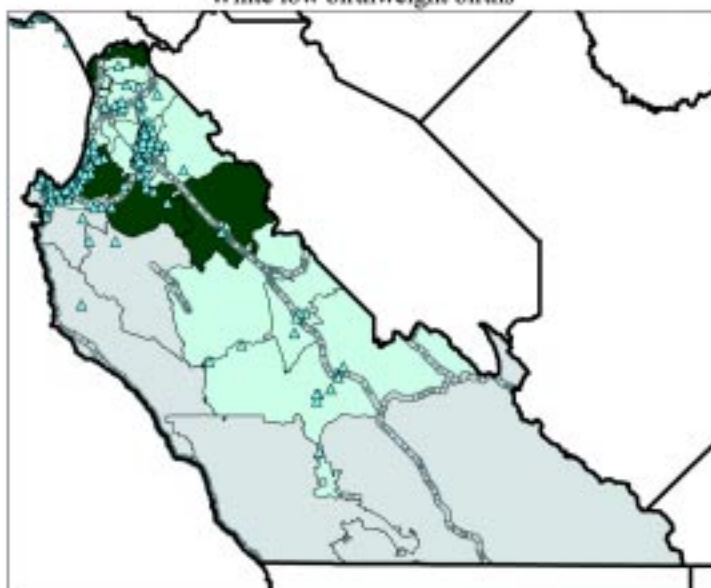
Monterey County



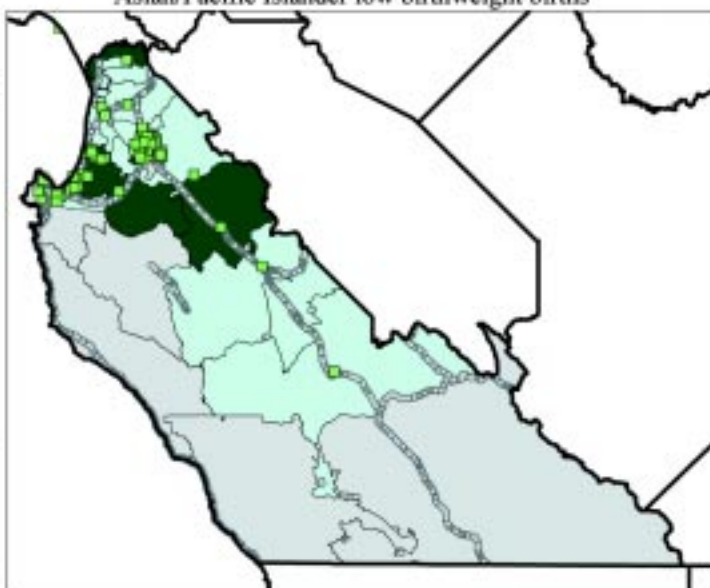
Hispanic low birthweight births



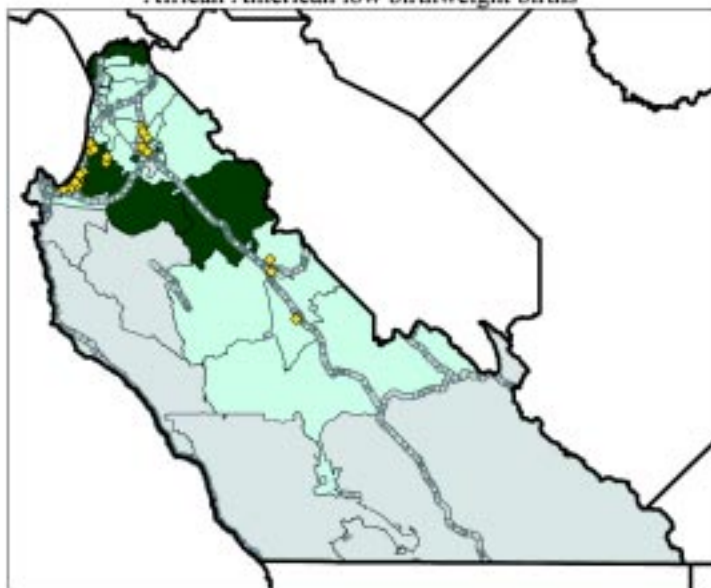
White low birthweight births



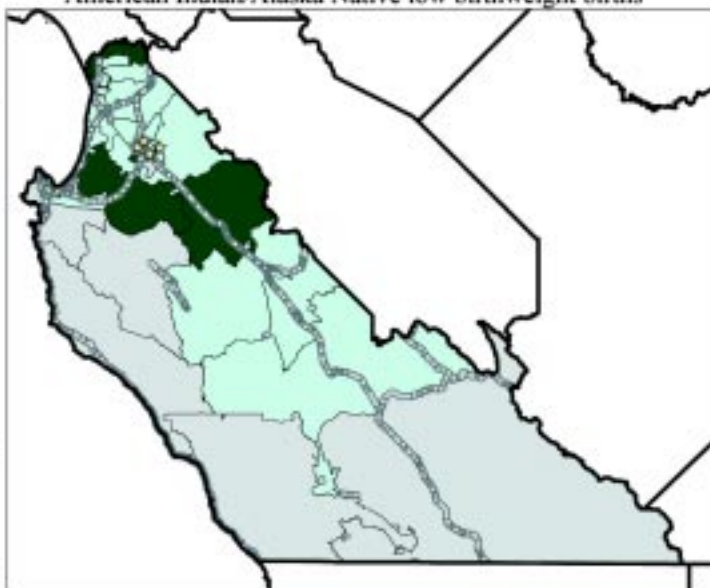
Asian/Pacific Islander low birthweight births



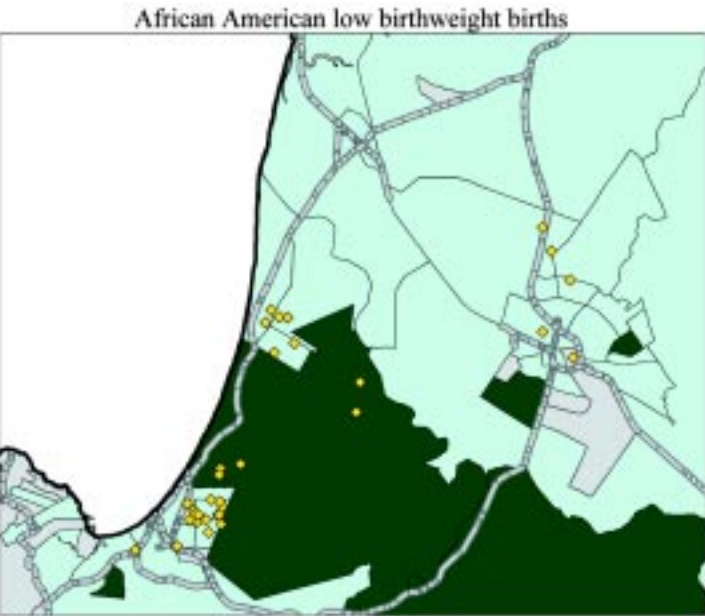
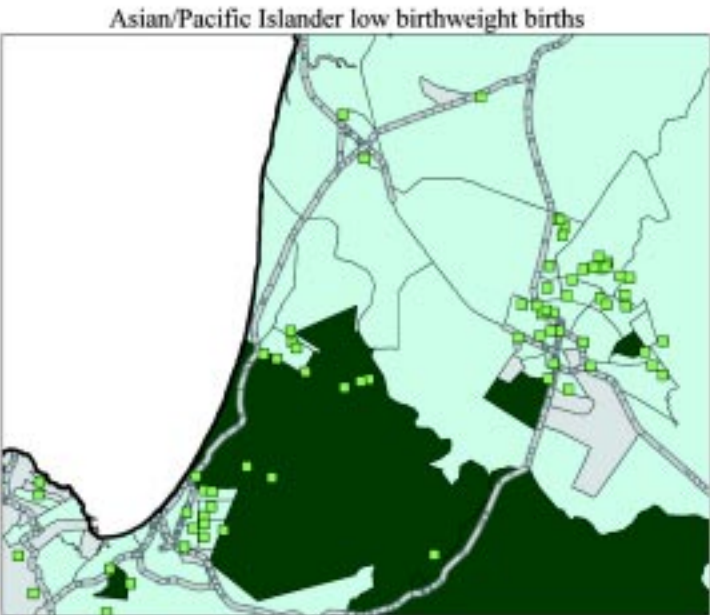
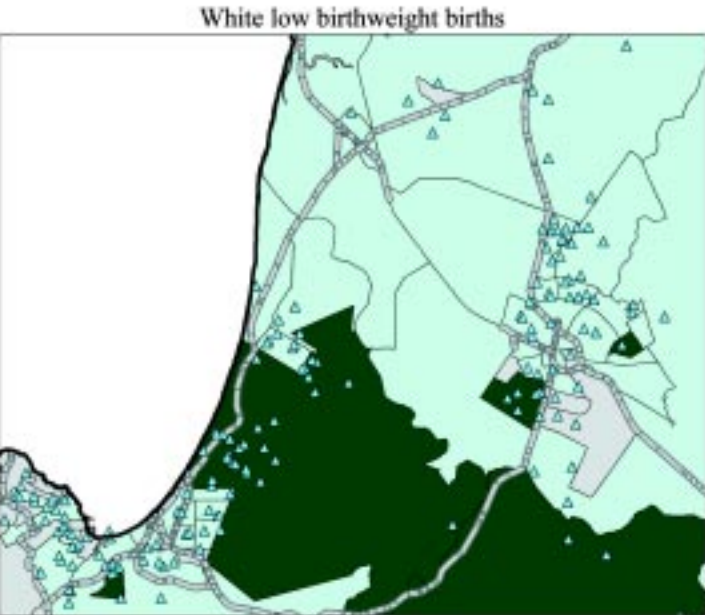
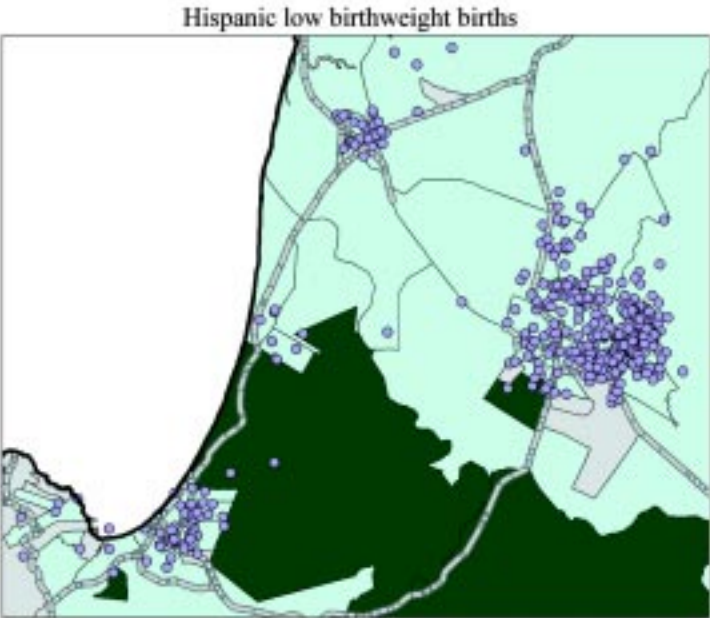
African American low birthweight births



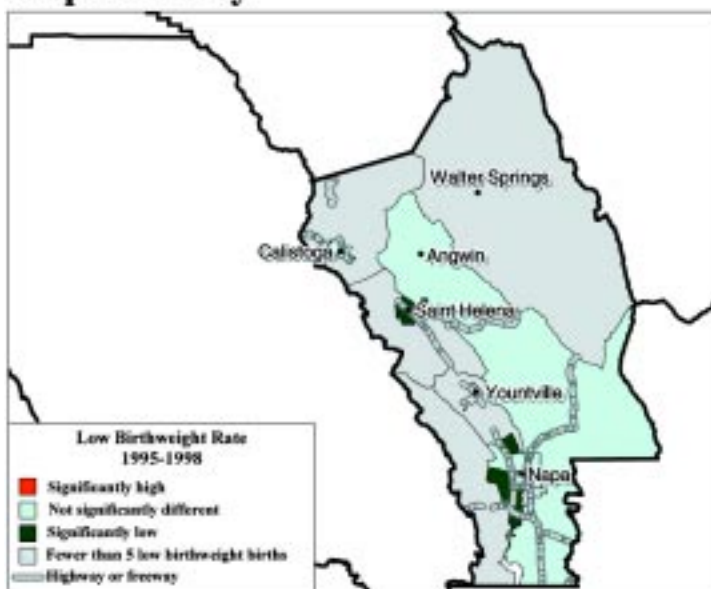
American Indian/Alaska Native low birthweight births



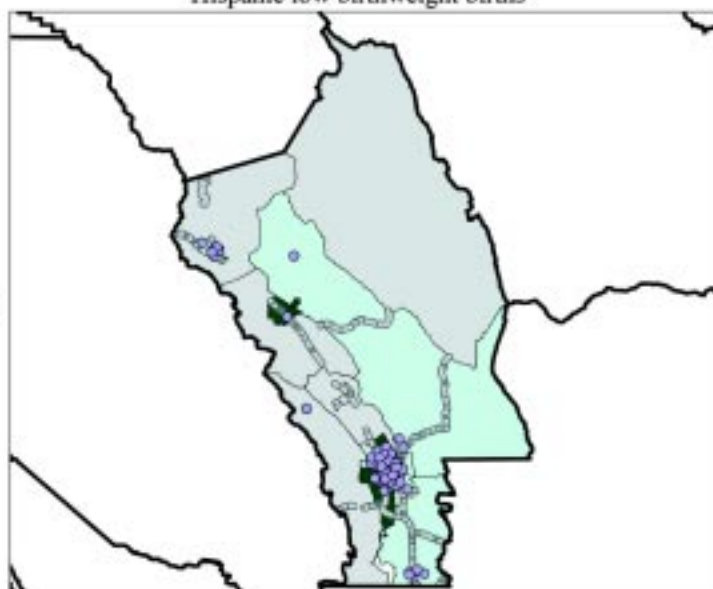
Monterey County, continued



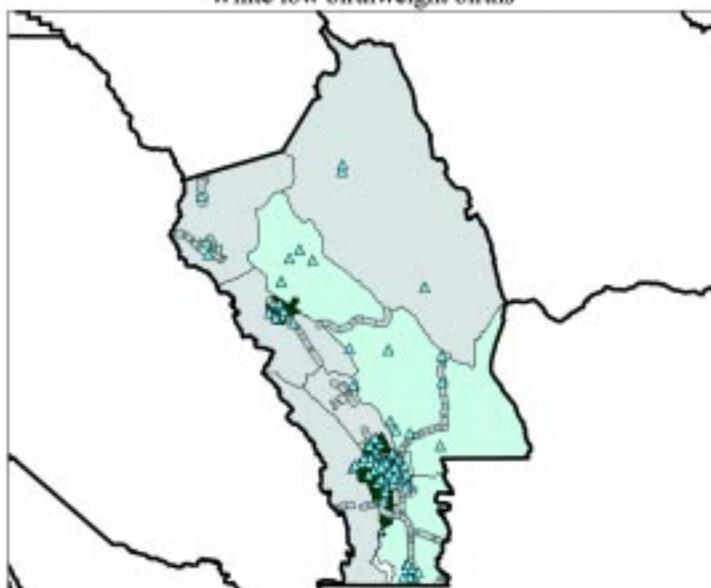
Napa County



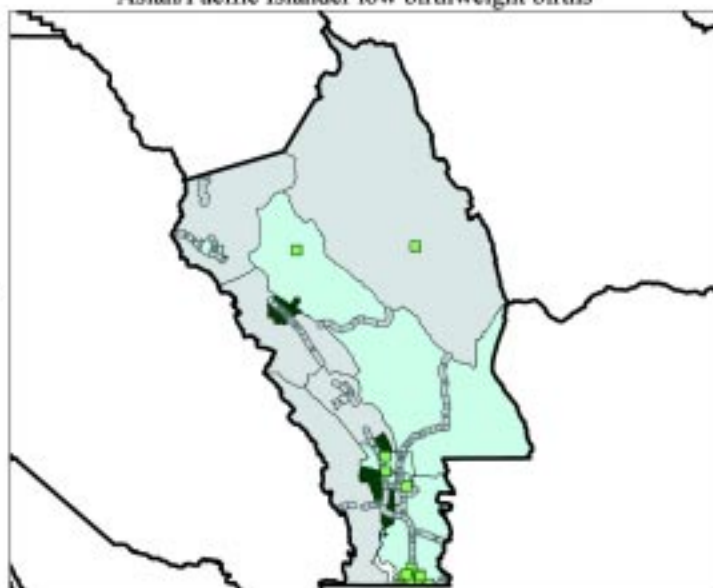
Hispanic low birthweight births



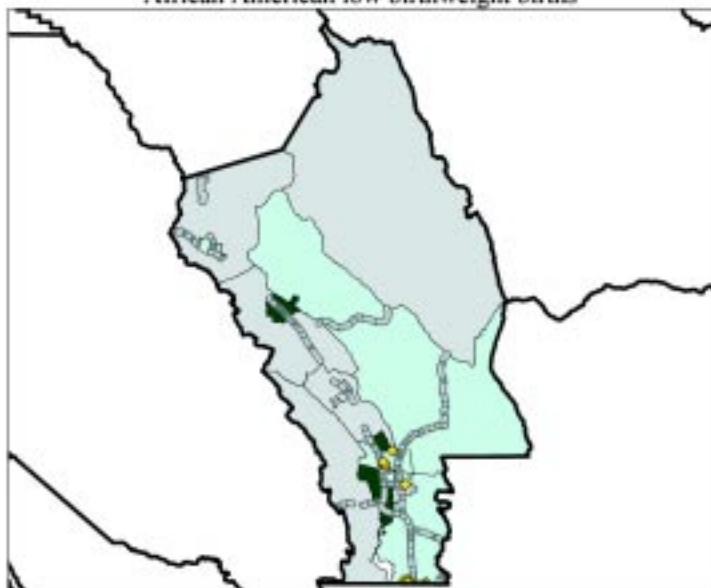
White low birthweight births



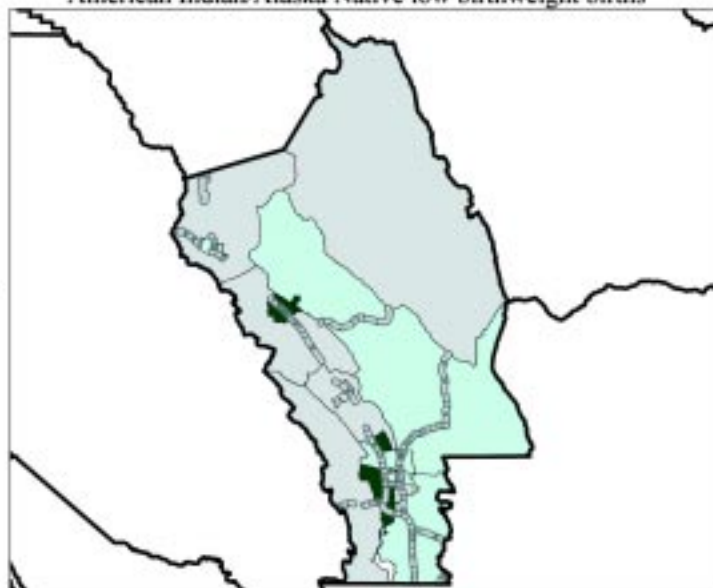
Asian/Pacific Islander low birthweight births



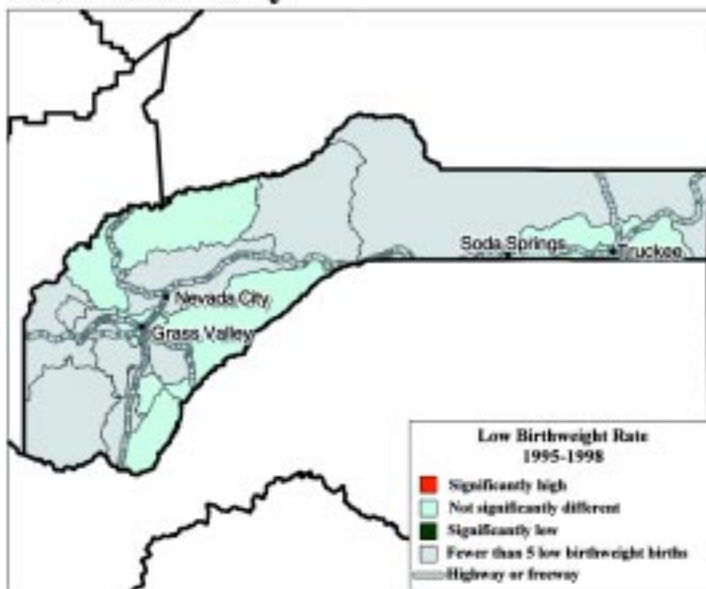
African American low birthweight births



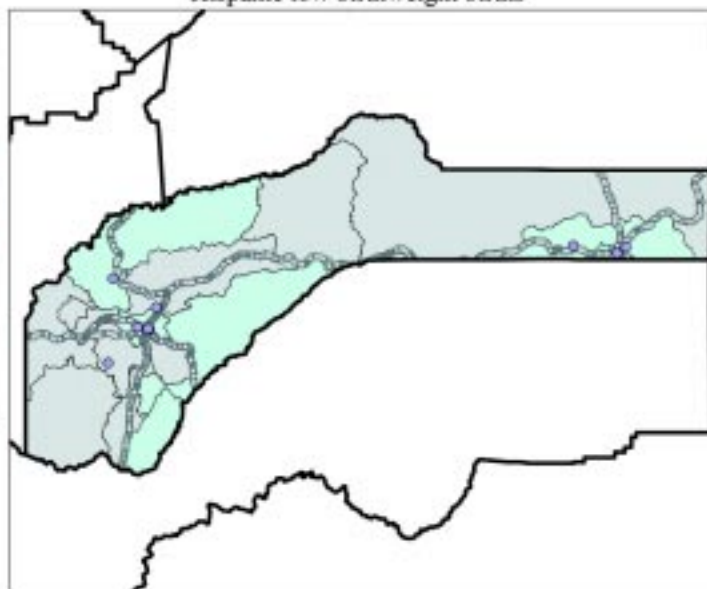
American Indian/Alaska Native low birthweight births



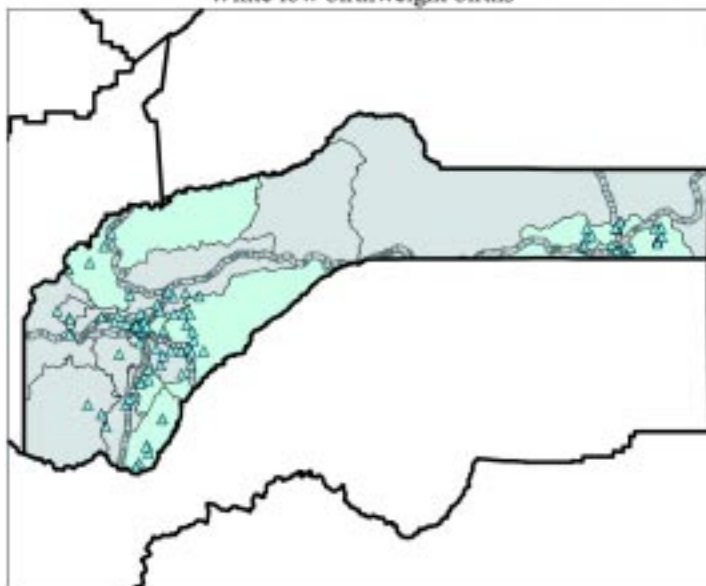
Nevada County



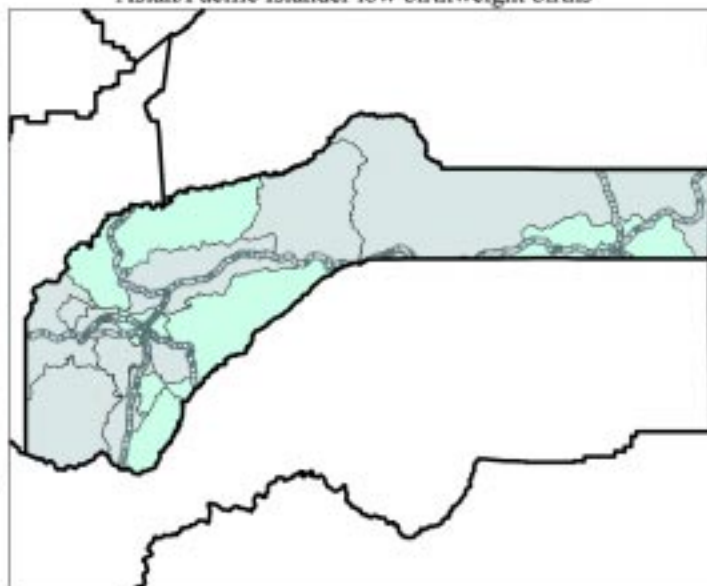
Hispanic low birthweight births



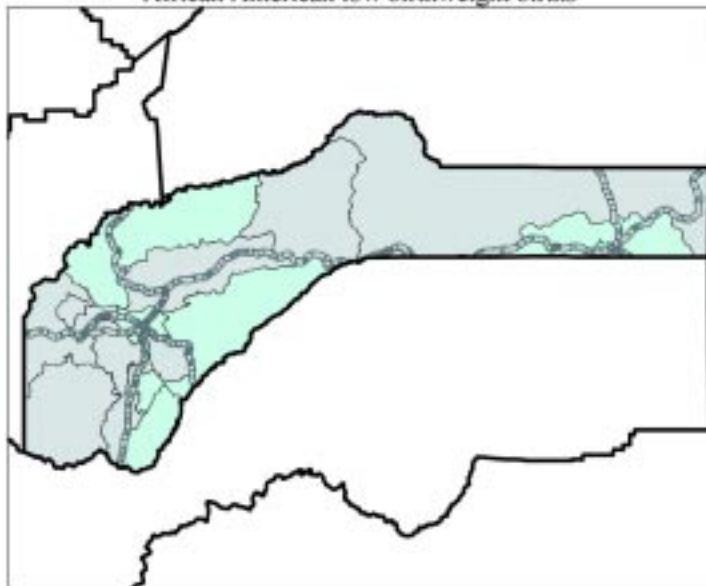
White low birthweight births



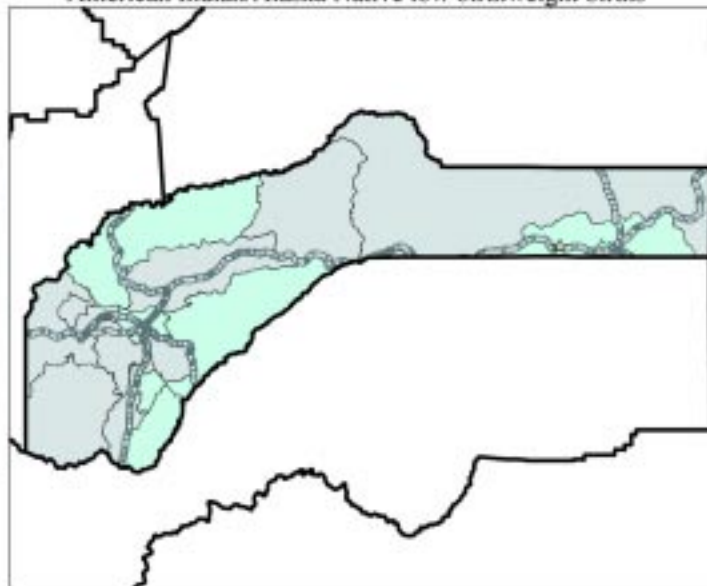
Asian/Pacific Islander low birthweight births



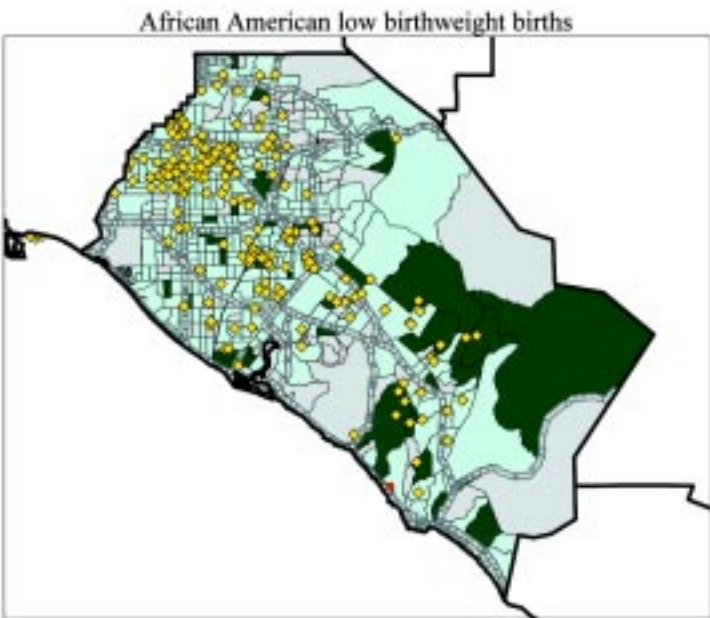
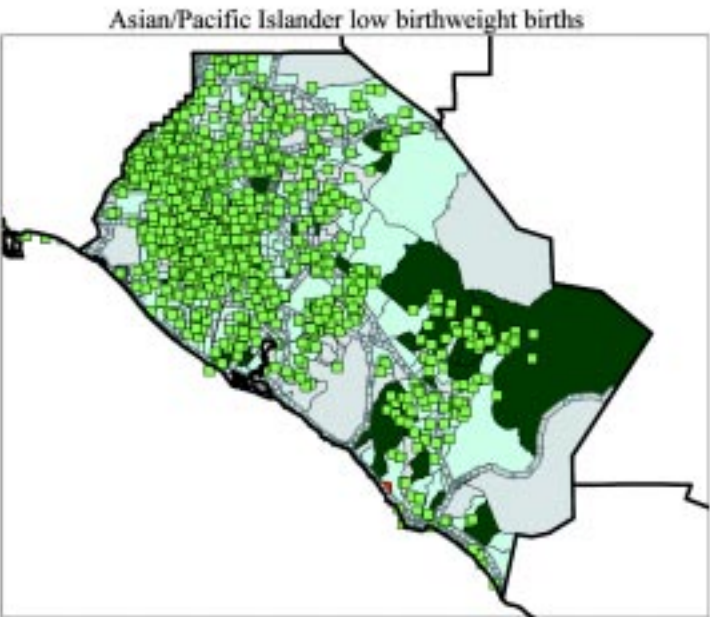
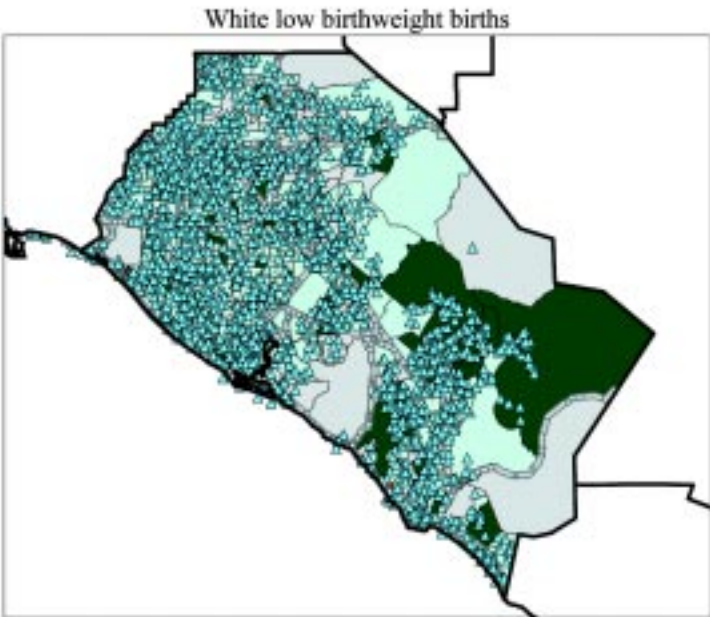
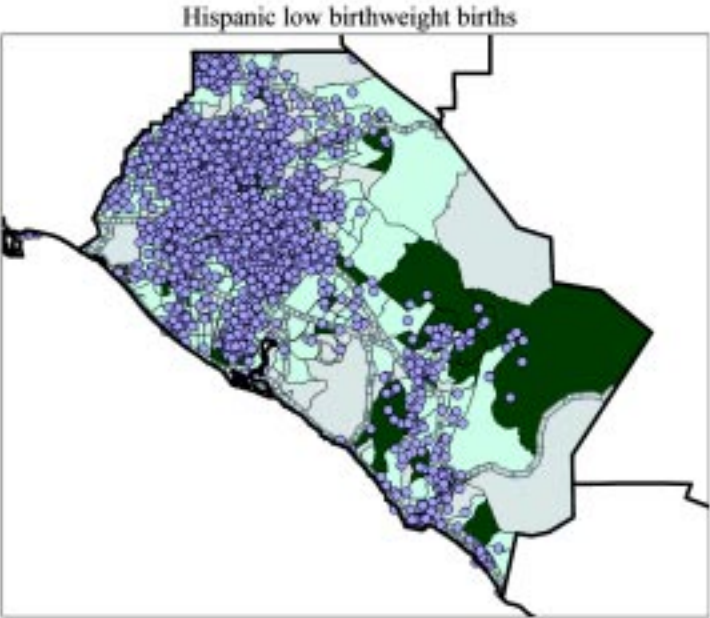
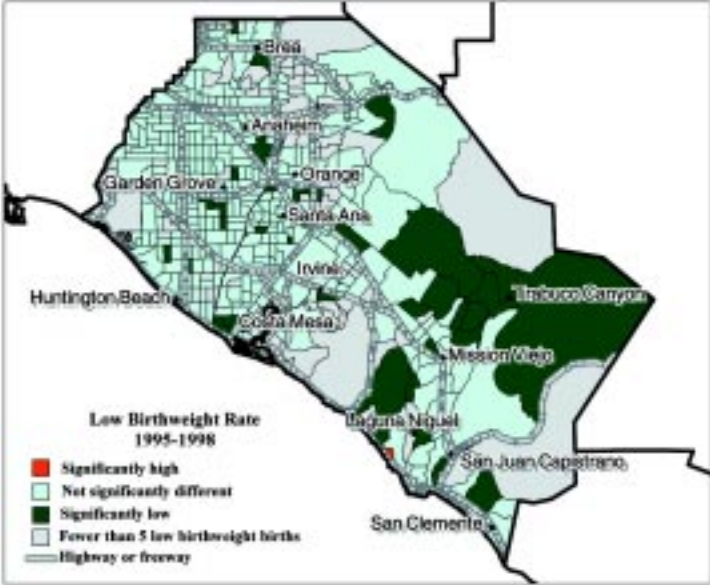
African American low birthweight births



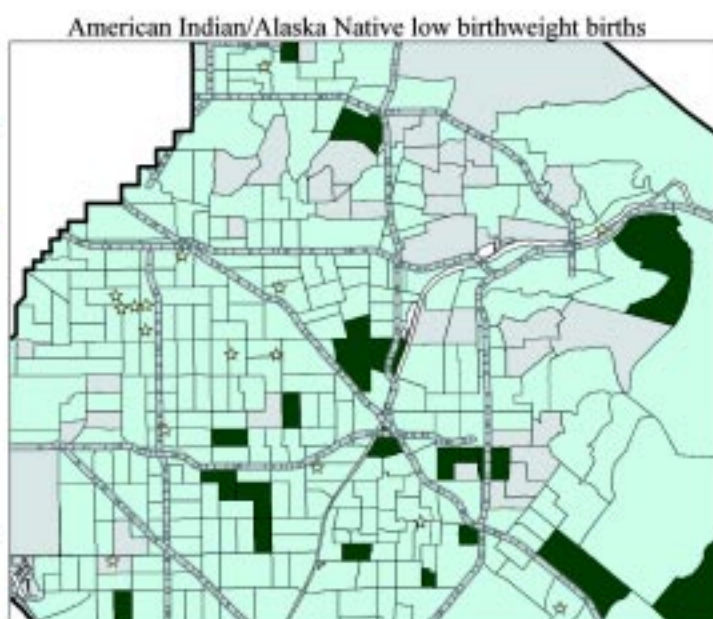
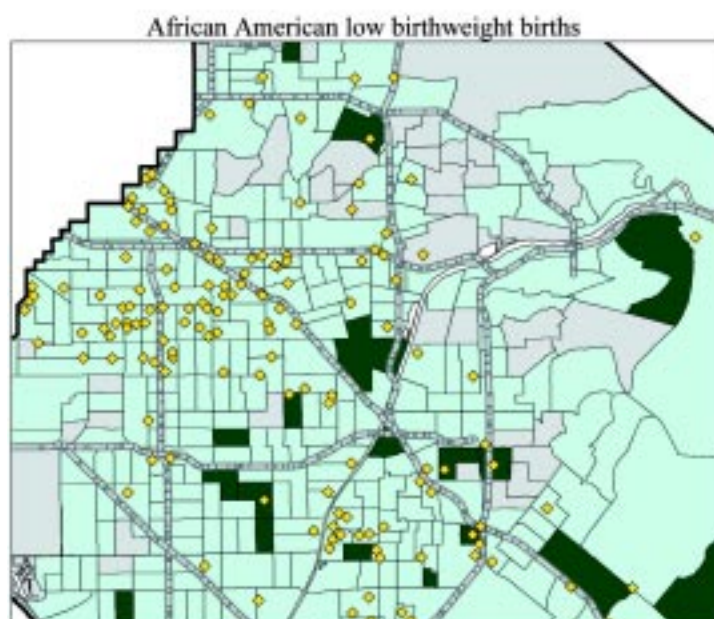
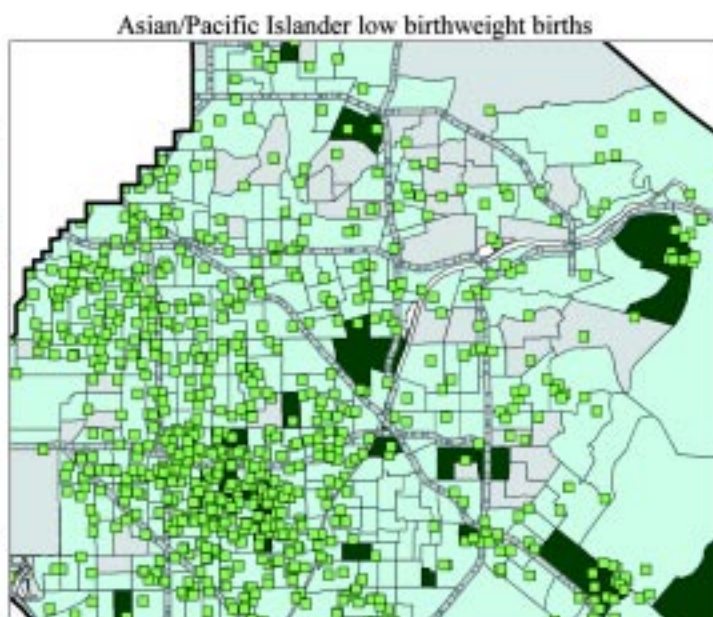
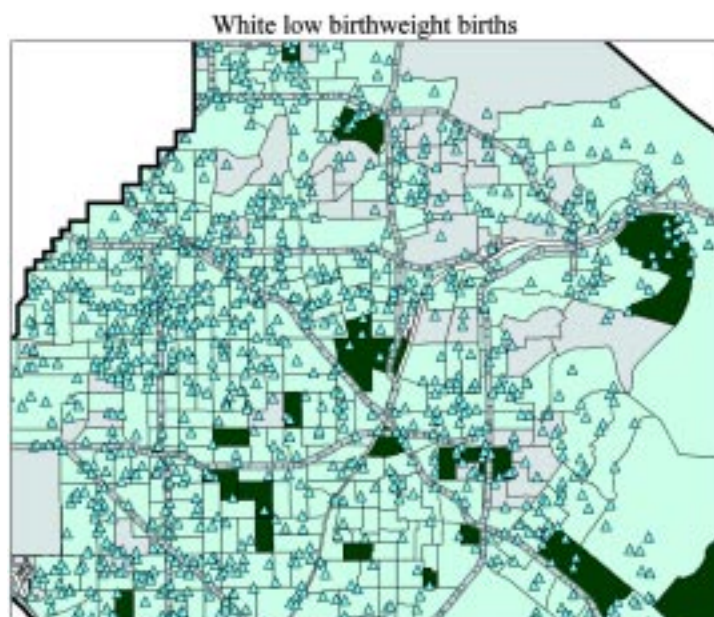
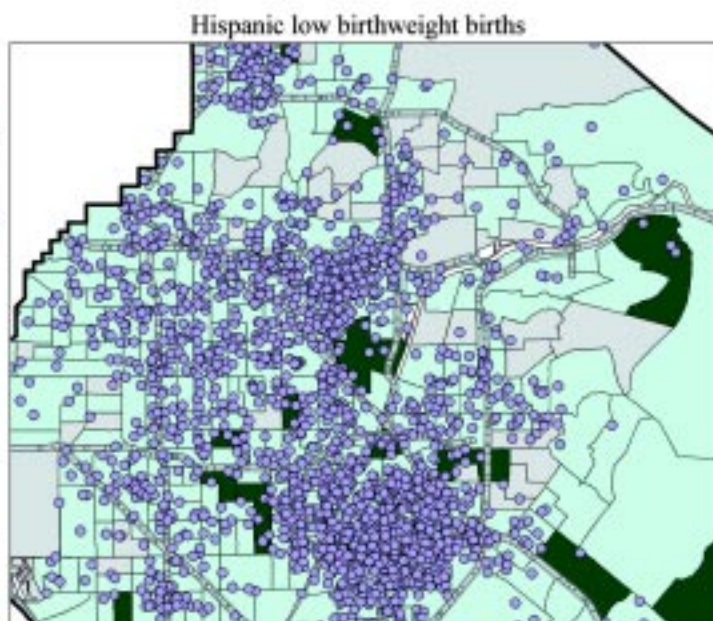
American Indian/Alaska Native low birthweight births



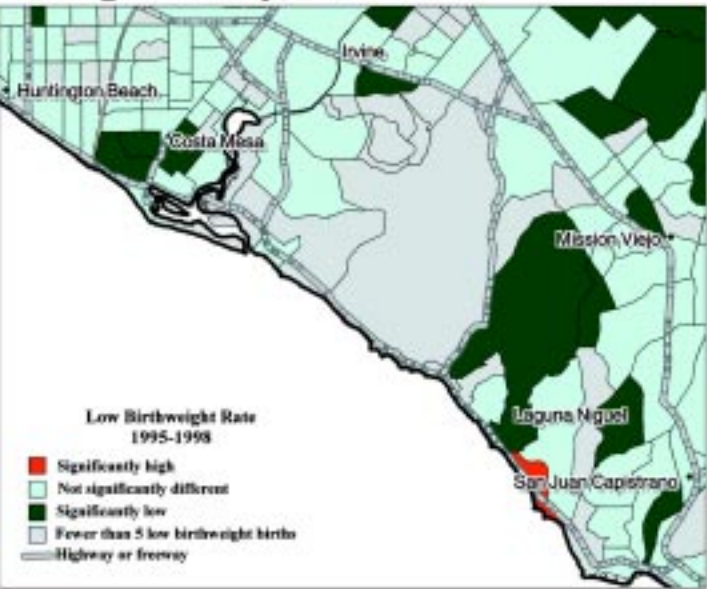
Orange County



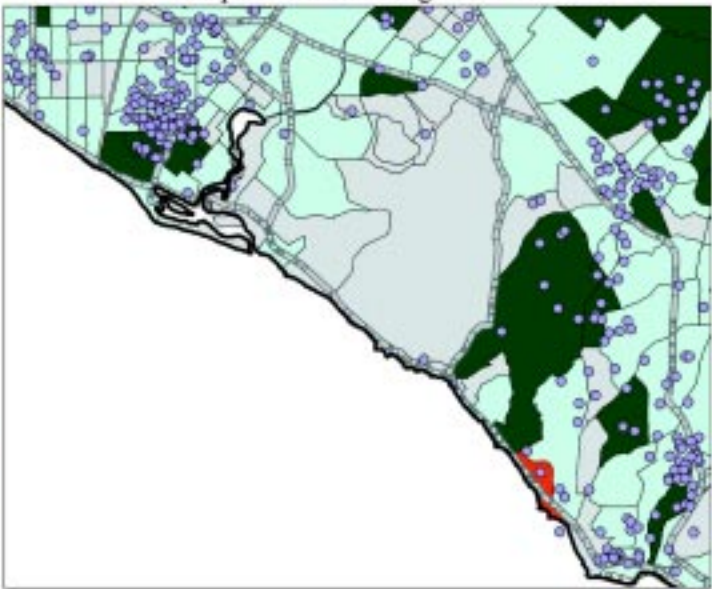
Orange County, continued



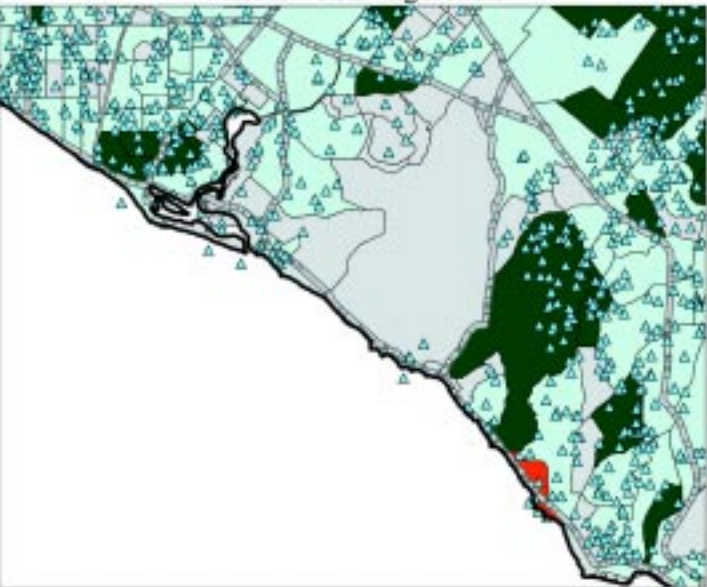
Orange County, continued



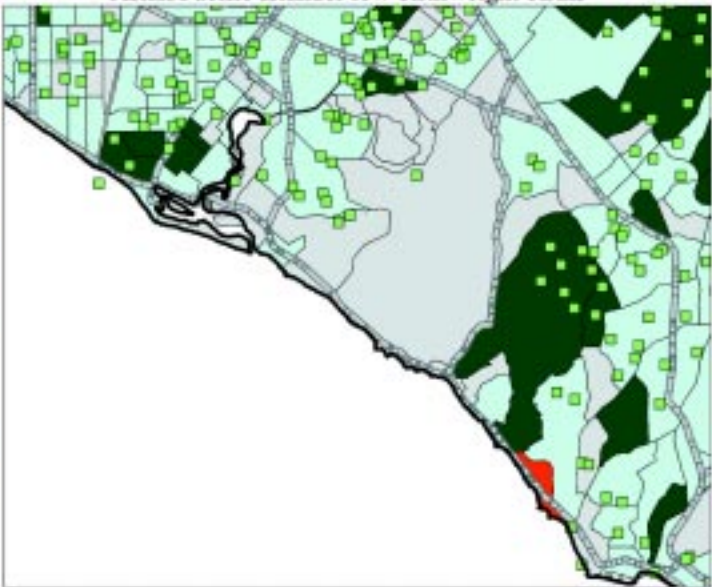
Hispanic low birthweight births



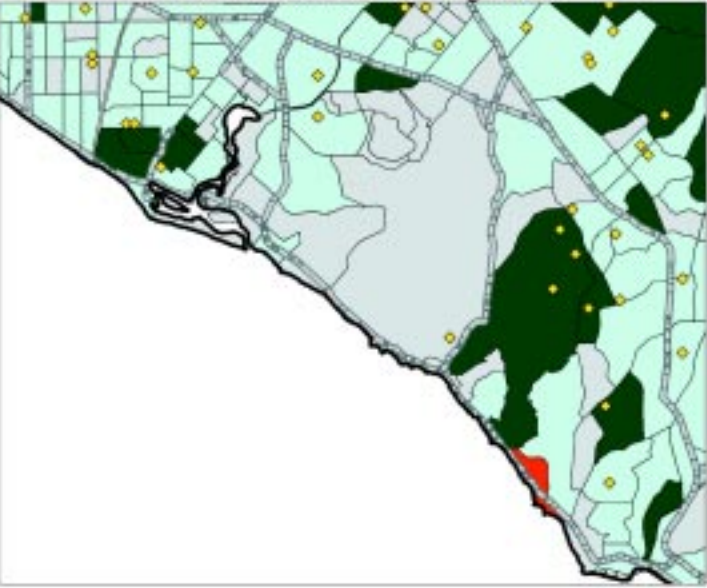
White low birthweight births



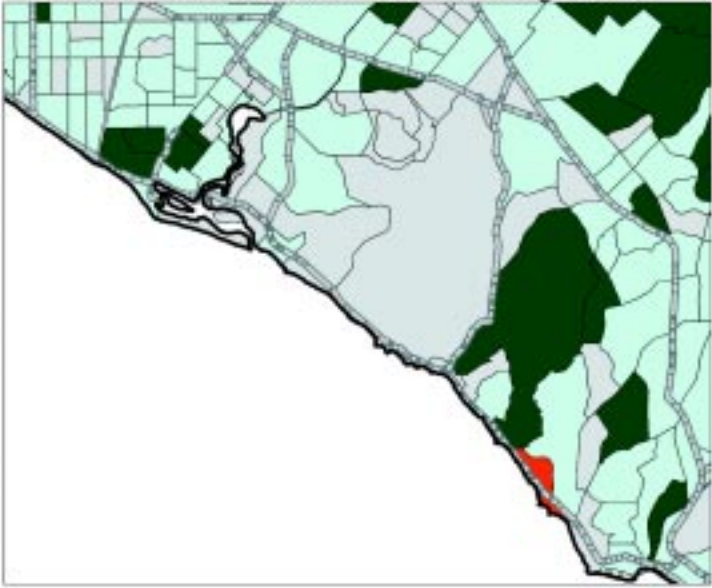
Asian/Pacific Islander low birthweight births



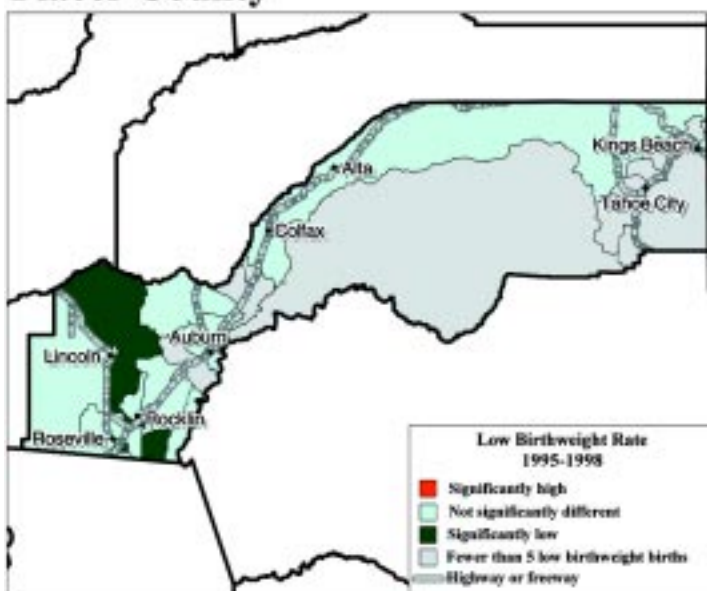
African American low birthweight births



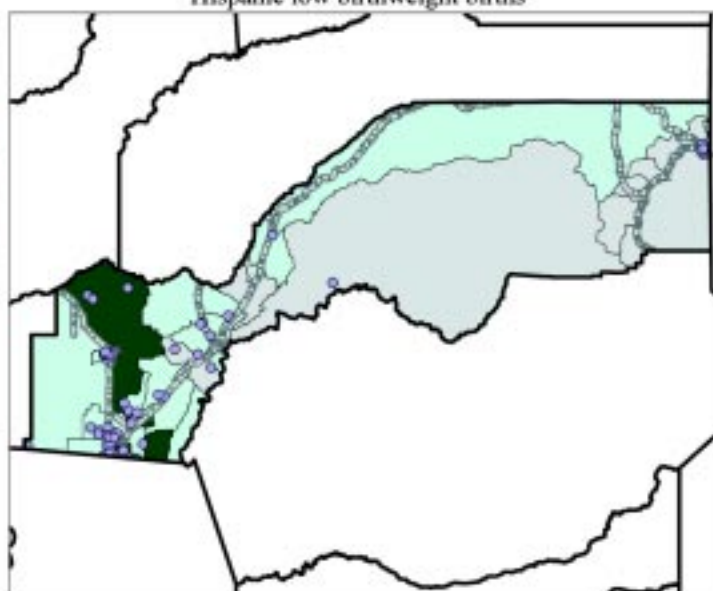
American Indian/Alaska Native low birthweight births



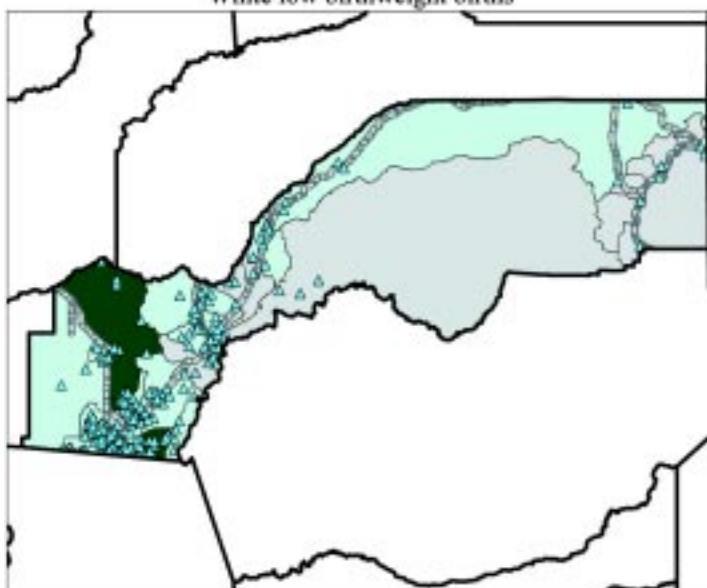
Placer County



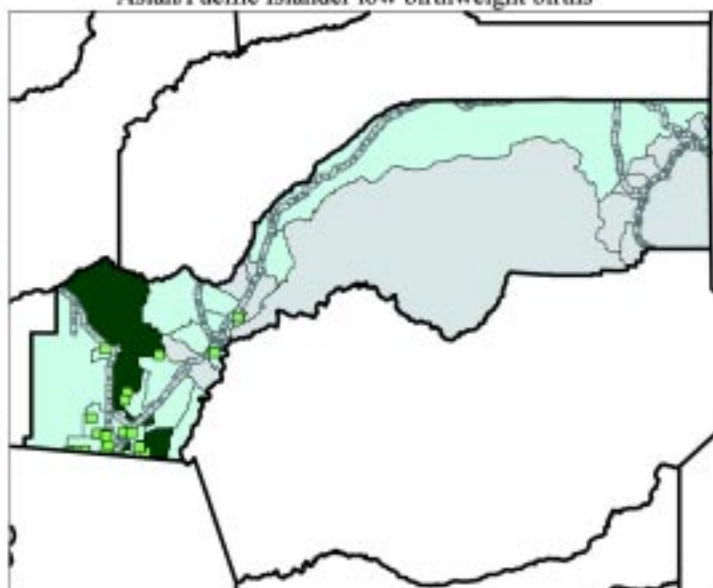
Hispanic low birthweight births



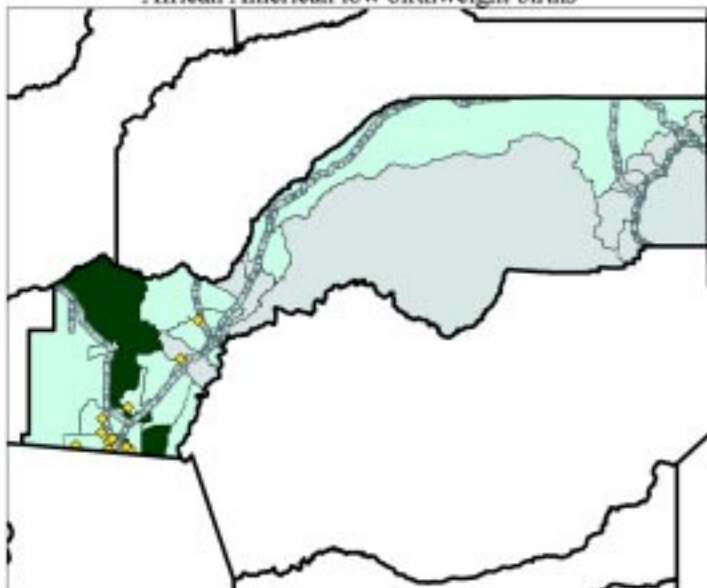
White low birthweight births



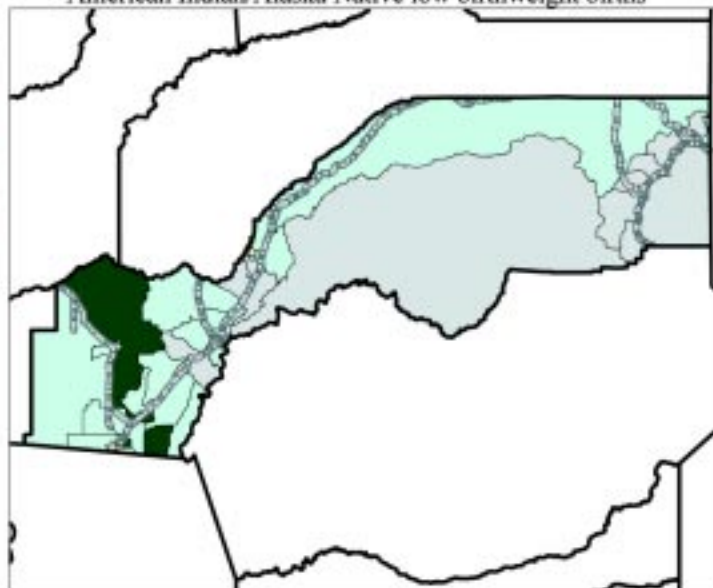
Asian/Pacific Islander low birthweight births



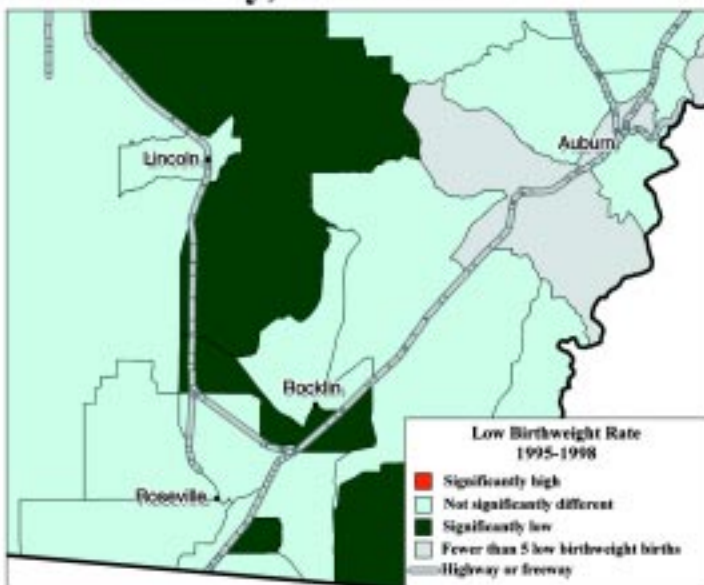
African American low birthweight births



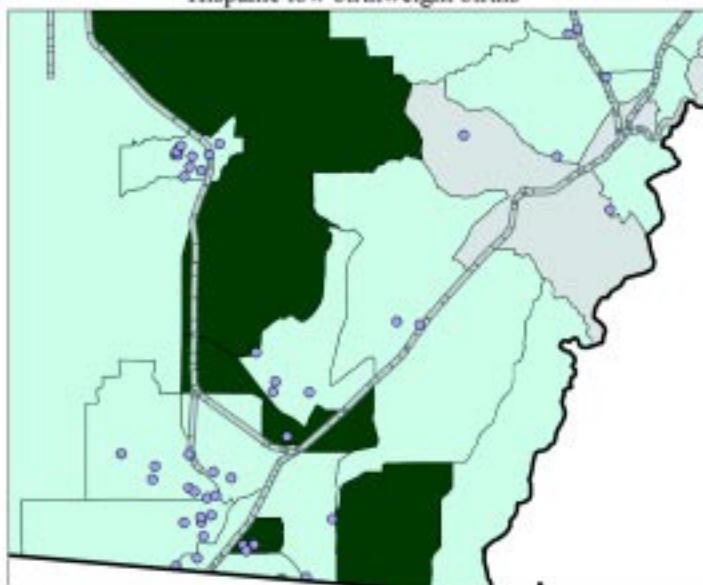
American Indian/Alaska Native low birthweight births



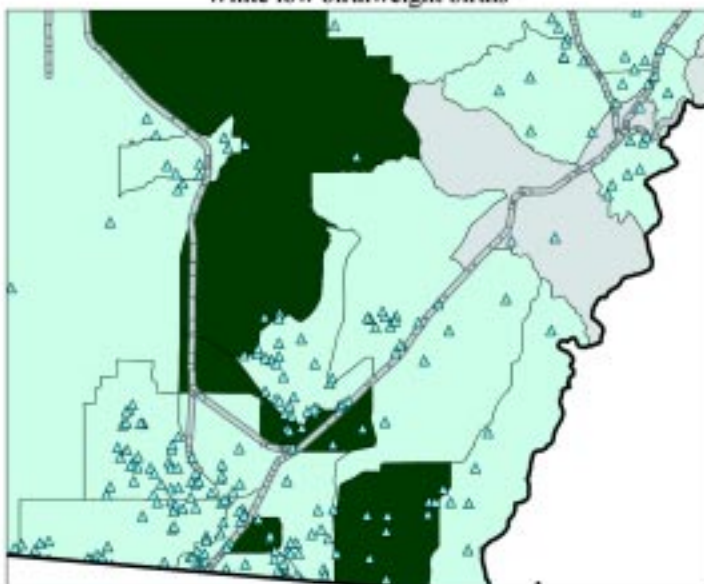
Placer County, continued



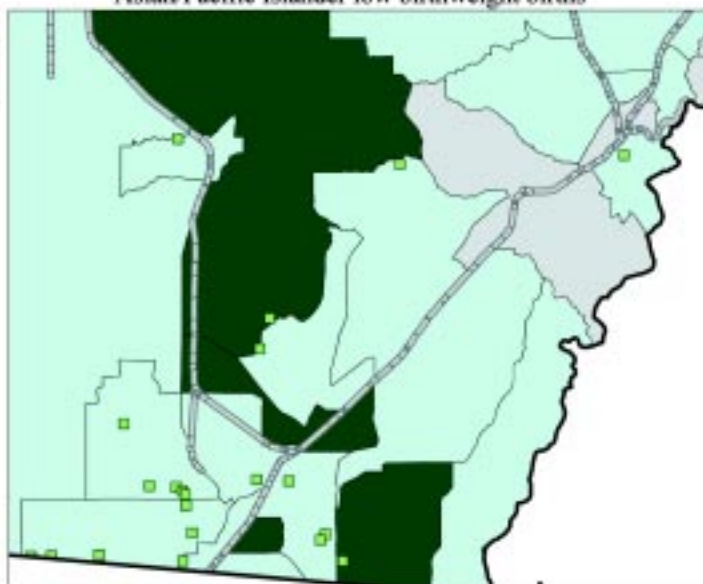
Hispanic low birthweight births



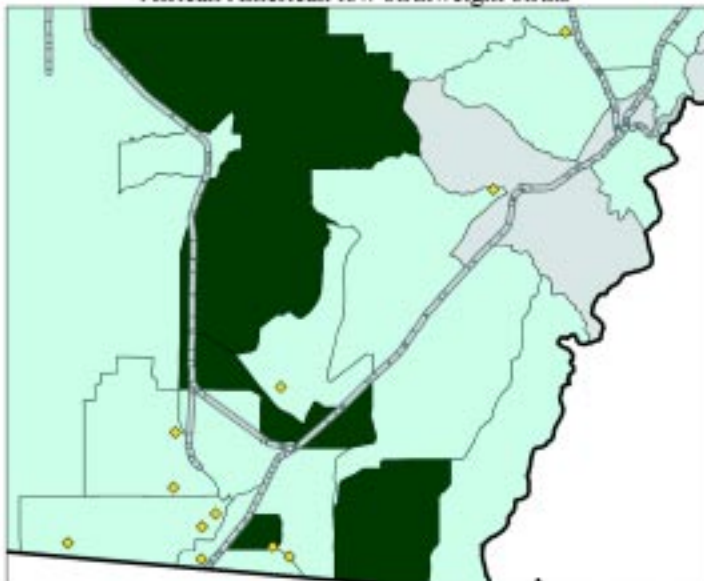
White low birthweight births



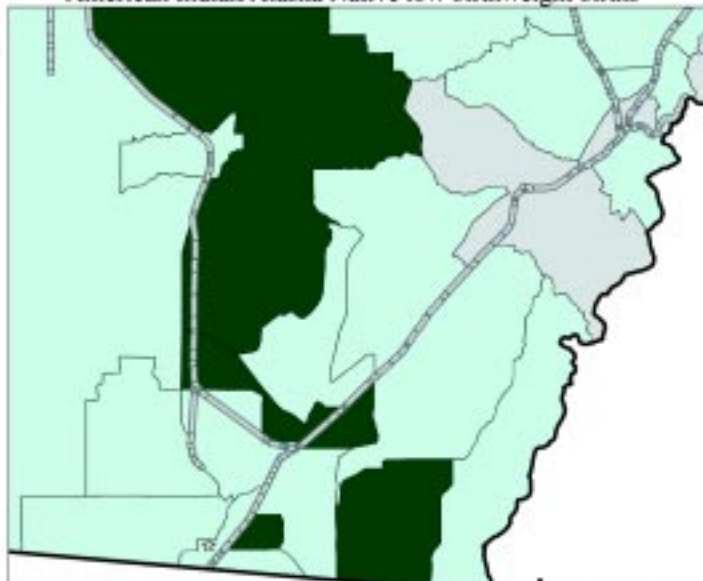
Asian/Pacific Islander low birthweight births



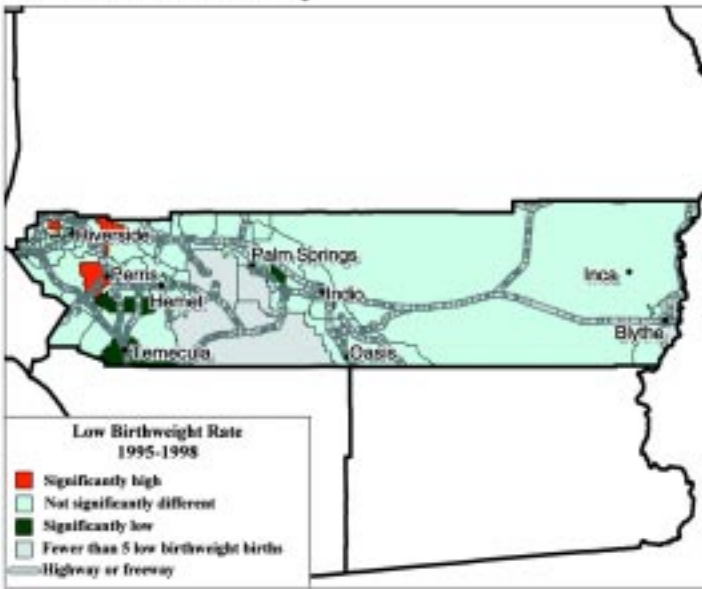
African American low birthweight births



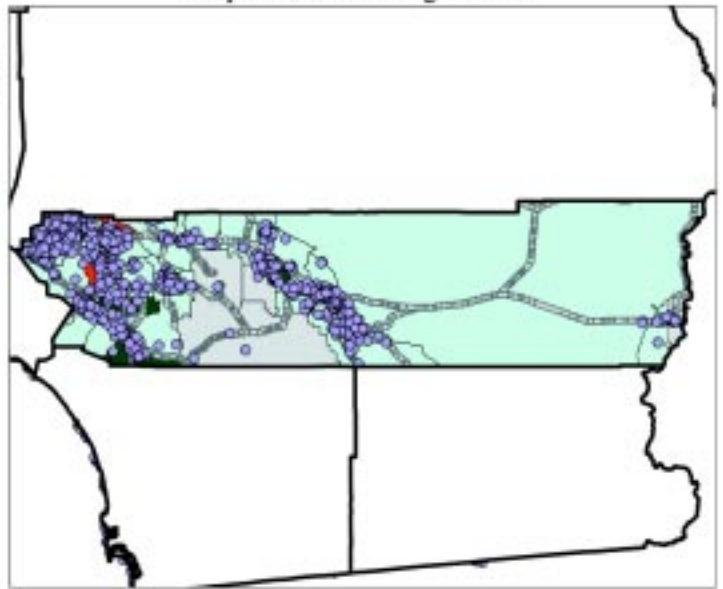
American Indian/Alaska Native low birthweight births



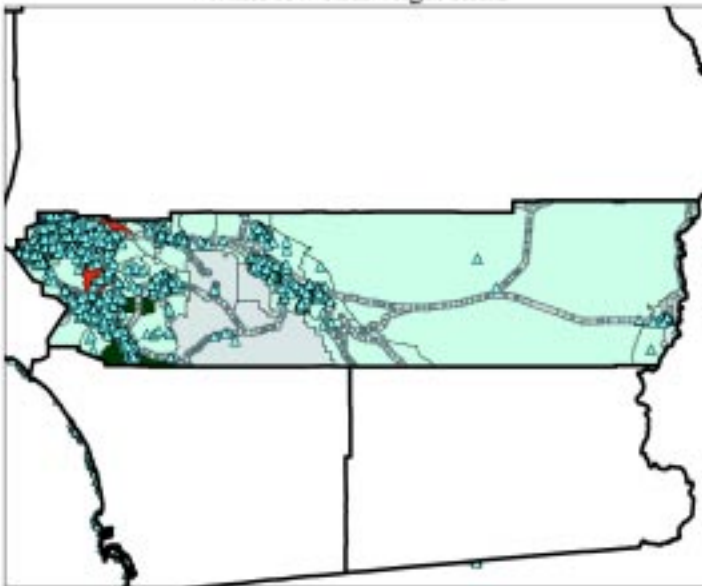
Riverside County



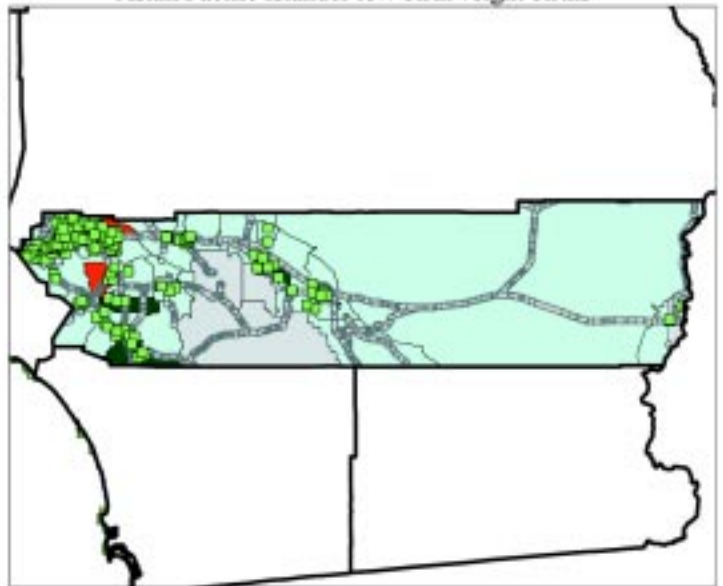
Hispanic low birthweight births



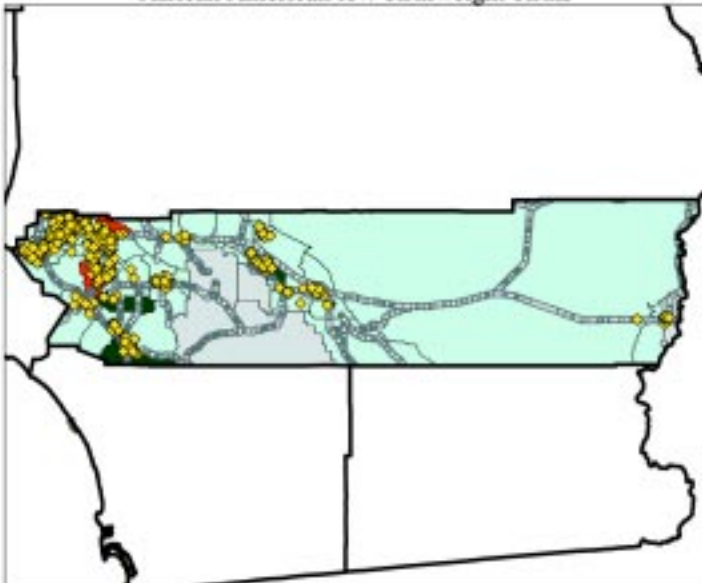
White low birthweight births



Asian/Pacific Islander low birthweight births



African American low birthweight births



American Indian/Alaska Native low birthweight births

